

BULLETIN OF THE
TAYLOR SOCIETY

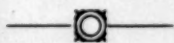
A SOCIETY TO PROMOTE THE SCIENCE OF
MANAGEMENT



SCIENTIFIC PRINCIPLES IN OFFICE
MANAGEMENT

SCIENTIFIC MANAGEMENT
OVERSEAS

CLEMENCEAU'S ARMY ORDER
WHAT LENINE SAID ABOUT IT
A WORD FROM THE FABIAN SOCIALISTS



Engineering Societies Building
29 W. Thirty-Ninth St.
New York

JUNE, 1919

VOL. IV, No. 3

TAYLOR SOCIETY

ENGINEERING SOCIETIES BUILDING

29 WEST THIRTY-NINTH ST., NEW YORK

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OBJECTS OF THE SOCIETY

(Extract from the Constitution)

The objects of this Society are, through research, discussion, publication and other appropriate means:

1. To secure an understanding and intelligent direction of the principles governing organized effort for the accomplishment of industrial and other social purposes for the mutual benefit of
 - A. The Community
 - B. Labor
 - C. The Manager
 - D. The Employer
2. To secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.
3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptation and application under varying and changing conditions.
4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, labor, the manager and the employer.
5. To inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective social responsibility.

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MANAGEMENT

ENGINEERING SOCIETIES BUILDING
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THE new format of the BULLETIN appears with this issue. Ordinarily such a change would not be made until the beginning of a new volume. It is believed, however, that the disadvantages of the change are outweighed by the advantages, and that the new form of the BULLETIN will stand as a symbol of the reorganization of the Society and as the first concrete manifestation of its more extensive and intensive activity and of its larger purposes.

IN the April number of the BULLETIN was published a letter from M. Henri Le Chatelier, accepting honorary membership in the Society. Now we are announcing also the active membership of M. de Freminville. This coöperation in the work of the Society by representatives of the best technical ability in France—best in the field of publicity as well as of practice—should insure that the development of the application of Taylor principles and methods in France will be under watchful eyes, and that there

will be in that country authoritative centers of information which will counteract any efforts which may be made to apply those principles and utilize those methods without an adequate understanding of their spirit, purpose and effects.

MEMBERS and friends of the Society are invited to contribute to the columns of the BULLETIN. In that way it will become not merely a communication to the members but, what is more worth while, a medium of communication for the members. Each member undoubtedly has his mind focused on some problem of particular interest to himself, something of a technical or pertinent general nature which he is investigating and concerning which he has formulated preliminary conclusions. He may not yet be prepared to submit a final and formal article on the problem, but it may be to his advantage and it certainly would be to the advantage of the membership generally, if he should share with them his preliminary conclusions. Col. Hall's editorial on "The New Day" is an example for others. Contributed editorials will be signed; those which are not signed it will be understood are prepared by the Managing Director.

WALTER D. FULLER'S article in this number on the "Application of Scientific Principles to Office Management", presented at the meeting of May 3, 1918, concludes the publication of the proceedings of meetings held before the interruption by the war. It is regretted that the publication of this important paper has been so long deferred. Its quality, however, is such that it cannot have lost by the delay. It is probable that it can receive more consideration and therefore have more influence now than if published immediately after its presentation, when the minds of office managers were more absorbed by a rapid succession of emergency problems, and could not give adequate attention to permanent policies of organization and management. The necessity for the formulation of permanent policies for economical and precise control in office administration was never greater than at the present moment.

ALLUSIONS have been made in technical periodicals and in the press to the increase of interest in scientific management in other countries than the United States. The letter from M. Henri Le Chatelier, in the April number of the BULLETIN, called attention to a circular of Clemenceau ordering the ap-

plication of the Taylor principles of management in all establishments operating under the French Minister of War, and stated that similar instructions had been issued by the French Minister of Marine with respect to the arsenal at Toul. The order of Clemenceau is printed in full in this issue. Extremely vague references also have been made in various places to an article by Lenine recommending the application of Taylor principles in Russian political and industrial administration. For the enlightenment of the members of the Society, a translation of the article by Lenine is presented in abstract. An abstract of the entire article is printed in order to give the reader an idea of the connection in which Taylor methods are referred to by Lenine. In addition to the Clemenceau order and the Lenine abstract, there is reprinted a section, relating to scientific management, from an educational hand-book prepared by Sidney Webb and Arnold Freeman, leaders of the Fabian Socialist group in England.

OF these three documents concerning scientific management, from as many different countries of Europe, one only shows grasp of the Taylor philosophy and methods. The French order is precise, for the technical advisors of the Minister of War knew what they were recommending. Some of them had been in this country, had visited plants and observed scientific management in operation, and had even had experience in developing a few French plants in accordance with the principles. The English document is not based on any such first-hand information. It must be admitted that it does not presume to be other than a hand-book of opinions, pro and con. But the publishers of such hand-books cannot evade a moral responsibility for the correctness and the influence of the opinions to which they give weight by publication. The adverse opinions concerning scientific management in this hand-book are derived from the Hoxie report, a report which is discredited to those who know the circumstances of its preparation. If ever an *ex parte* document masqueraded in the garb of science, it was when that report appeared. It presents as evidence of its method, a questionnaire which, to the mind of the scientific investigator, is impressive; it presents also conclusions presumed to have been derived from the data yielded by the questionnaire and direct observations. But it does not present the data themselves; the shell of a questionnaire is given but not the meat. Even if the data had not been

analyzed according to the methods of scholarship before the conclusions were published, there has been plenty of time since to analyze and publish the data. The Russian document is interesting revolutionary propaganda. It presents all shades of normal and sub-normal keen thought and idealism. Its recognition that the "higher-than-capitalism social system" must show, to survive, a greater productive efficiency than the capitalistic social system is sound logic; its assertion that that greater productive efficiency cannot be secured without an "improvement of the emotional and cultural state of the masses of the population" is both sound logic and fine idealism; but throughout the entire article there breathes the spirit of the super-boss and the industrial autocrat. As one critic has suggested, not content with committing innumerable crimes against men and women, the Bolsheviks now propose to commit a crime which is worse—against political and social democracy. It is this mental attitude which shows Lenine's lack of understanding of the spirit of scientific management (he does grasp its mechanistic efficiency). Scientific management is no more possible in the super-boss society than is industrial democracy. It does require, in the words of Sidney Webb, that industrial organization "allow to the managers of industry that freedom of initiative and power of direction which is, whether under individualism or collectivism, indispensable to industrial progress." But freedom of initiative and power of direction which are the result of force imposed from above, *against the will to co-operate of the worker*, cannot conceive and develop scientific management, or secure its technical results.

IT is interesting to note that, so far as they have come to our attention, discussions in other countries of advanced American methods of management are concerned with the "Taylor System." No other philosophy of management is mentioned. There is a reason; there is no other *philosophy* or *system*. Numerous books other than Mr. Taylor's have been written on management, "efficiency", and detailed "efficiency" methods; numerous reorganizations and installations have been made by others than Taylor practitioners; yet out of all these books and all these installations has come nothing which is referred to as such and such a philosophy or system of management. If these books have aimed to discuss principles they have been general and platitudinous; if they have aimed to discuss detail they have done so

without relating the detail to principles; sometimes their aim has seemed to be to advertise someone or someone's universally applicable managerial formulae. The only expounder who has discussed management in such wise as to appeal to the foreign engineer's demand for completeness, coherence and logical consistency, and for generalizations which have solid foundation in ascertained facts, is Mr. Taylor. Therefore there is a Taylor philosophy or system, and no other. Therefore Clemenceau refers to Taylor works only; Lenine speaks of "The last word of capitalism in this respect—the Taylor System"; and the English Fabians refer to no other system to be considered in connection with the increase of productive efficiency necessary in solving problems arising from the war. And when we turn from consideration of complete philosophies of management to special phases of management, those contributions which have become classic, because original and important—Gantt's task and bonus and daily graphical balance, Barth's slide rule; Gilbreth's motion study—are products of the Taylor school.

A PROPOS of this greater attention to scientific management overseas, the following words are of interest. They were written by Mr. Louis Rutler, who after some six months with the Tabor Mfg. Co., returned to France to serve in the ranks. Wounded, captured, imprisoned in Germany and broken in health, he was later interned in Switzerland and finally repatriated through exchange of prisoners. He had begun his service in the Tabor Mfg. Co. with a prejudice against scientific management; he left after six months actual experience with an appreciation and interest the extent of which is indicated by the following paragraph from his letter: "People are talking a great deal of the Taylor System, and M. Victor Cambon, writer on industrial subjects, has done the most to make American methods generally known in France. In his books he speaks of the Tabor Co. I will send you an extract which I am sure will interest you. I clipped it from the *Journal des Internes in Suisse*. As you will see, the movement is making progress and I can assure you on my own account that I have always been a fervent partisan of these practical and above all logical methods; so much so that I have never missed an opportunity to spread information concerning it everywhere that I have been while a prisoner in Germany, while interned in Switzerland and since my return to France. I receive fre-

quently letters from workmen who ask me for explanations of the Taylor System and I never hesitate to respond. I will always charge myself with the duty of recruiting good workmen sufficiently intelligent to wish to work under these methods, which before the war found in France more enemies than friends."

EVERY MEMBER A SPECIAL REPRESENTATIVE

THE Taylor Society is a coöperative institution. That should be clearly understood if the Society is to develop in accordance with its plans and is to accomplish the purposes it has set itself. The officers are administrators for the members, the Managing Director particularly giving all his time to the affairs of the Society; but these administrators can serve the members, try as hard as they may, only to the extent that they represent a membership which is a *coöperating group*.

There is not an objective to be accomplished with respect to which each member, as well as each officer, does not have a function to perform. The functions of officer and of member are complementary and, like the two blades of a pair of shears, are essential each to the other.

We have in mind at the present moment a purpose of the Society to increase its membership to include all that is best in management engineering. A thousand applications for membership, discriminatingly seconded by present members, should be received within a year. Who the persons are who should make these applications is not known by any individual officer or member, but they are known by the aggregate of members of the Society. Each member knows five or ten prospective candidates, and it should be an obligation assumed by him to make certain that those he knows to possess acceptable qualifications are informed concerning the organization and objects of the Society and are inspired to coöperate by becoming members.

This office has a function in connection with increasing membership, but it is not identical with and cannot replace the function of the individual member. The duty of the individual member is to interest and secure the application of those qualified individuals personally known to him. The duty of this office is so to conduct the totality of the affairs of the Society as to make membership worth while. The effort of the member should be to inform, interest and secure

the application of the acceptable candidate. The effort of the office should be to build up such good will for the Society as to promote the member's efforts. Just as by advertising quality and service, the manufacturer of an automobile creates in many individuals a susceptibility or desire for his product, so by the conduct of the affairs of this Society the directorate should create a susceptibility or desire for membership. Likewise, just as the agent for the automobile comes into intimate contact with and sells to the purchaser, so each member of this Society must make the contact with the prospective member and inspire the application. Every member is a special field representative of the Society.

THE MANAGING DIRECTOR'S JACKETS

THESE are not articles of clothing nor are they the property of the Managing Director. They are valuable mechanisms of management and belong to the membership of the Society. They are merely in the custody of the Managing Director as agent of the members. And they are encumbrances, occupying valuable space, unless used by the members and by them given the power to function. We refer of course to the folders which are ready to receive, classify and house, for study by the Board of Directors, the great number and variety of suggestions regarding the activities of the Society, which must be submitted by the members if the Society is to be a live, influential, democratic institution.

The establishment of an office and of a paid and responsible manager under a directorate should enable the Society to accomplish more and to have more influence. But what the manager and directorate can accomplish unsupported by the members is insignificant compared with what can be accomplished by the full support of the membership. Full support of the members means something more than the payment of dues, attendance at meetings and an occasional dropping in at the office. It means, in addition to such things, a constant flow into the office of suggestions and constructive criticism. In some such way only can the activity of the Society become an expression of the desires of its members and be made truly to serve them and to serve society. From among these suggestions will come the "big idea," which when acted upon will constitute the big service of this society, not merely to its members, but to industrial citizenship.

The number of jackets which the Managing Director is to have is not fixed. That will depend upon the volume and particularly the range of the suggestions and criticisms which are submitted. Therefore no member should hesitate to assume his responsibility in this connection, for fear there will not be a jacket for any one of his suggestions.

Several jackets are already prepared and are awaiting use. The following labels, not exhaustive, are indicative of what is desired. Bulletin: articles for; Bulletin: format of; Education: coöperation in; Employment; Experiments; Industrial Relations; Investigations; Lecturers; Meetings: programs; Meetings: speakers; Members: new; Practice: ethics of.

Most of these labels are self-explanatory. Two perhaps require special comment. What suggestions are desired for the jacket Lectures? One means by which the Society hopes to promote its general plan of education is the providing, upon request, of speakers on scientific management or on special phases of management for industrial associations and for educational institutions. Every member is expected to coöperate by suggesting the names of persons who in his judgment would make suitable speakers and the phases of management in which they are respectively particularly informed. Every member is expected also to volunteer for such service, and to put himself at the disposal of the Managing Director for that purpose for one, or two or even three times each year. In that way the Managing Director can schedule speakers, on request, according to the following variables: the phase of management on which a talk is desired; the speakers available for talks on the desired phase of the subject; the place where the talk is to be given; the residences of available speakers.

The jacket Practice: ethics of, should receive the especial support of the members of the Taylor Society. One of the objects of the Society is to "inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective social responsibility." To that end there must be developed a code of practice. No satisfactory code or even creed now exists. The statement which is printed on the inside back cover of this Bulletin is tentative only. It must be perfected and on it as a base must be reared a superstructure which shall be a reasonable, workable code of practice. Let this Society be the first to formulate such a creed and such a code! Let every member participate by

suggestions, and particularly by submitting for consideration cases of questionable and of meritorious practice which have come to his attention. Let the creed and the code be generalizations derived from cases, and not snatched out of the air.

THE NEW DAY

WE have victoriously concluded a war in which practically all the peoples of the modern world have taken part. This war has been avowedly fought to decide whether democracy or autocracy should prevail, and the forces purporting to be the advocates and defenders of democracy have won a complete military victory. The price of this victory has been upwards of seven million human lives, as many more maimed human bodies, an expenditure of so many billions of dollars that one cannot really comprehend the figures, devastated lands, ruined homes and broken families. Hell indeed broke loose and civilization was on the verge of destruction.

The peoples of the world have paid this mighty price—victors and vanquished alike. The mighty and the weak, the rich and the poor have contributed to the full, and the peoples of the world are now demanding a return on this investment of human life and wealth. They are asking for a new state of society which will assure them of Peace and the fruits of Liberty and they are insisting upon a definition of their rights. Upon this definition the fate of the world may well be said to hang.

Certain it is that the old order has passed never to return and that a new day is here. He is indeed a foolish man who deludes himself into believing that the present unrest will subside and that after a time we will go back to the same conditions that existed before the war. He is a wiser man who squarely faces the issue and devotes his ability and efforts to assisting in working out a satisfactory solution, for until such a solution is offered there will be no rest.

Europe is in a ferment. Governments have been overthrown, new governments have been formed only to be in turn discarded for something else, and no one can predict what the next development will be. But the peoples of Europe now in revolution are largely those who for generations have been oppressed and denied all opportunities for self expression or an assertion of their rights as human beings. Under such circumstances revolution can only take one course—a great uprising of the whole people and a violent overthrow of existing institutions. From the resulting confusion the peoples themselves by experiment and

trial must gradually evolve some other form of government better suited to their needs. In order to endure, any government so formed must both satisfy the needs of the governed people and be capable of economic coöperation with the other peoples of the world.

Any policy of interference, any attempt to dictate to the European peoples in revolution how they must govern themselves, is unsound and can only be productive of continued disorder. If they are given opportunities to obtain food and the other necessities of life, and then left free to work out their own political problems, they are bound to arrive eventually at some solution that will meet their own needs and at the same time permit them to deal in harmony with the rest of the world.

The situation in our own country gives evidence of the same unrest that is stirring the balance of the world. Labor has arrived at a recognition of its tremendous power and is prepared to demand and will undoubtedly secure a just share of the fruits of industry. But our country, unlike the others, already possesses the governmental machinery which the people can use to secure and safeguard their rights, and the destructive methods which may have been necessary in Europe are not necessary here.

It is perfectly possible to work out a plan which will make labor and capital coöperators without recourse to bloody revolution. But this can be accomplished only by an admission on the part of capital that there shall be democracy in industry; and a recognition on the part of labor that in order to secure the greatest benefits there must be increased productivity per unit of effort in industry.

The members of this Society and others who subscribe to the principles for which it stands, are the individuals above all others who by belief, training and experience are peculiarly fitted to be leaders in reorganizing industry to meet the changed conditions. They know industry, they are masters of the art by which production can be enormously increased without undue expenditure of human effort, and are inspired with a determination to see fairness and justice accorded to all.

They have their feet on the ground; they recognize that the most altruistic theories in the world, unaccompanied by practical execution, will always remain theories; and they possess the technique which is indispensable to the application of sound principles to industrial activities.

KEPPELE HALL.

Ed.

TECHNICAL ASPECTS OF THE NEW DAY

THE "New Day," which some believe to be immediately before us and some believe already to have dawned, means different things to different men. To some it signifies international amity and the disappearance of war. To others it means communal ownership and the disappearance of capitalism. A larger number see in it less radical changes, but one change which to them seems radical enough—a sharing of management, even in privately owned concerns, with labor—industrial democracy. Nearly every view emphasizes the industrial aspects. There are few who do not believe it at least involves a continuance of high wages, a shorter working day, various kinds of industrial insurance, safer and more agreeable working conditions, and an additional overhead of managerial mechanism pertaining specifically to industrial relations.

The minimum of these expectations cannot be realized without paying a price. No one of business experience would dispute the statement that any private concern adopting one or more of these features of the new day would find its expenses increased. Likewise were a community or a group of related concerns to take such a step, their aggregate expenses would be increased. The result would be the same for a nation, a continent, the whole world.

Individual concerns, or any group of them, can accept these added expenses without the elimination of profits and eventual bankruptcy, only on certain conditions. There must be also either a compensating reduction of expenses elsewhere; a compensating increased income through selling the usual output at a higher unit price; or a compensating increased income through selling at the usual unit price, an increased output from the given combination of capital and labor. Under competition and some monopoly conditions a larger unit price is impossible. That leaves one or both of the other conditions. But a compensating reduction of expenses elsewhere, or a larger output from the same combination of capital and labor, may be reduced in the last analysis to the same thing—greater managerial and other technical efficiency.

In this respect what is true of individual concerns or a group of them is equally true of the entire world, were it suddenly everywhere to experience the additional costs due to the new day. It is superficial reasoning or no reasoning at all which inspires the belief that were all subjected simultaneously to the

same increase in costs, differential disadvantages would be removed and a higher unit price could be charged by all concerns, thereby saving profits and permitting higher wages and shorter hours all at the same time, output from a given combination of capital and labor remaining the same. The higher *nominal* wages would have to be used to purchase higher priced commodities and higher *real* wages would disappear; or in terms of a shorter day instead of higher nominal wages, the unchanged wage would purchase fewer commodities, the standard of living would be reduced and the new day would disappear. The only way to meet the costs of the new day, for individual concern, group of concerns, nation, continent or world, is greater technical productivity from a given combination of capital and labor. Technically, that is what the new day signifies. It takes us straight to Mr. Taylor's fundamental thesis—higher wages and lower unit costs. Of all the writers on management Mr. Taylor only started with that fundamental economic concept, and that is why he alone succeeded in expounding a coherent and logical philosophy of management.

Lower unit costs, or a greater output from a given combination of capital and labor, can be effected in various ways—is actually being effected in a great number of ways. An enumeration of the methods of securing greater efficiency, now actually practiced, is impressive: the invention of more efficient machines; the invention and utilization of labor-saving devices, and in general the substitution of machines, increasingly automatic, for human labor; the standardizing of materials and conditions and methods of work, in such a way as to make possible better planning, eliminate waste and in general secure the most precise and economical control of the units of material and energy which enter into production; the selection and intensification of effort of superior employees through higher wage rates; the technical training of employees; the securing of that more intense application which automatically follows improved esprit, in some cases through betterment of physical working conditions, in some through the betterment of social and spiritual working conditions, and in a few instances through the incentive which follows responsible and general coöperation of labor in management.

This list is indeed impressive, but the impression is highly artificial. Two things should be borne in mind: first, few enterprises present more than one of these methods in their individual efforts to increase technical efficiency—the minds of managers are

peculiarly likely to run on single tracks; and second, these methods are subject to the law of diminishing returns and a point is soon reached in which the economy of use disappears. Most managements are dominated by the spirit of opportunism—snatching now at this device, now at that; hoping with the adoption of any one particular device which appeals to them, that "that problem, thank Heaven, is solved once and for all!" Few are the enterprises in which are found large, logical and consistent managerial policies, four track trunk line as distinguished from single-track-mind policies.

In fact, the newer the new day—the more numerous the costly details which distinguish it as a new day—the greater the necessity, for those enterprises which hope to live into and enjoy its sunshine, for broadminded, far-seeing managers and corresponding managerial policies. No one of the devices for increasing technical productivity which we have enumerated will, *by itself*, suffice. The managerial policy of that day must comprehend all and accurately appraise and wisely utilize each. The enterprise which does not, will with difficulty survive the dawn.

We believe there are signs that both capital and labor are approaching the new day with the gravity of the technical problem in mind. Capital has been interested in devices for decreasing unit costs except the device of inviting labor to share in the determination of working conditions and methods; but now there are instances of capital giving attention even to that. Labor has strenuously opposed those technical methods of decreasing unit costs which involve better-planned application of units of labor energy, not so much because opposed to these methods *per se*, but as a strategic necessity in the fight for recognition of its, labor's, solidarity. That recognition has practically been gained, as a result of the war, and now there are instances of leaders of labor approving the slogan of greater productivity. And the point of view of one Socialist at least is indicated by the following words of John Spargo: "Every serious student of the problem has realized that the first great task of any Socialist society must be to *increase the productivity of labor*. It is all very well for a popular propaganda among the masses to provide a great reduction in the hours of labor and, at the same time, a great improvement in the standard of living. The translation of such promises into actual achievements . . . will require a great deal of labor, and such an organization of industry upon a basis of efficiency as no nation has yet developed." There are indeed signs

of the appearance of the new managerial policies required of those industrial enterprises which wish to make the new day a day of sunshine rather than of gloom—and possibly of disaster—to themselves.

WOMEN WORKERS AND THE "TASK"

IT is not certain to what extent, as a result of the experience of the war, women will be employed in industries hitherto believed suitable for the physically stronger sex only. During the period of readjustment there is not likely to be a great call for women in such industries. But as soon as industrial activity becomes more intense the relative shortage of workers will remind employers that the necessities of war had proved that women could do much of the work once considered suitable for men only. It is quite possible therefore that we shall witness an increase in the number of women workers and in the range of industries in which they are represented.

Assuming such a probability, the principle "equal pay for equal work" becomes important. Women will have means, political and industrial, for compelling acceptance. It seems certain to take the form of "equal pay for equal productivity," for the manager will not wish to experience the uncertainties with respect to relative costs—relative to those of his competitor employing men only—resulting from the principle of equal pay for equal units of time; too little is known about the part played by physical strength and endurance, as a factor distinct from manual skill, in productive effort.

The first impulse will be to adopt piece rates for women workers. That would seem to remove the uncertainty of the influence on costs. But the farsighted manager will take further thought. He will realize that the physical capacity of women is an unknown factor; that rates may be set which assume or induce an effort which cannot or should not be sustained; that modifying social legislation would be sure to result; and his experience will tell him that such legislation would almost inevitably involve costs to be borne by himself.

The wise manager will conclude that he had better precede the employment of women in any great numbers by measures which will give him knowledge and control of working conditions, and that his wage contracts had better be for the performance of measured tasks in a plant having standardized conditions, materials and processes. Such standardization will be a problem of development and not of installation.

APPLICATION OF SCIENTIFIC PRINCIPLES TO OFFICE MANAGEMENT¹

BY WALTER D. FULLER²

THE war situation is bringing home to all of us, in each of our branches of endeavor, the two big industrial problems which the United States faces, depleted labor and the necessity for increased production. We know that the idea of speeding up production by lengthening laboring hours is a delusion. The labor upon which we must draw is limited now, will become more so, and is of inferior grade. We are face to face with a labor condition, the like of which the world has never known. The unrest and turnover among employees is unparalleled in the history of industry. It is obvious then that to maintain our normal output, and even more so to increase our production, it will be necessary to devise improved methods in handling our labor, or in industrial procedure, or both.

Being more or less awake to this fact, industry is alert for improved methods. We come here to make an interchange of our ideas, of our failures and our successes. To this end, I have the honor of addressing you on office management.

No matter with what industry we may be concerned, we have many problems in common. Most of us have to maintain along with our manufacturing employees, a good sized clerical force. A large number of factories have long since adopted scientific methods, entailing standardization of effort and output; most offices, however, have as yet failed to make progress along this line.

My subject is "The Application of Scientific Principles to Office Management."

In its entirety, office management includes all the duties of an office manager—involving both the human and mechanical factors. An ideal office manager must be conversant with the labor market, know the rates of wage he must reasonably give at the time

of hiring, decide between experienced and inexperienced workers, know the psychological and reasonable time for increases in wage, be assured of the training of his workers, use judgment in eliminating the unfit, and select and develop his office executives. He must also study his office equipment and arrangement with a view to minimizing loss of time and energy. He must decide all questions of detail and method, make thousands of decisions daily concerning matters which are solely his problems as administrator, and see to it that the work runs smoothly and evenly through his department. Although it is perfectly possible to apply scientific principles to each of these divisions of effort, a comparatively short paper could not cover satisfactorily the employment problems, the problems of training and developing employees, wage problems, administrative problems, and problems of method and production. I will confine myself solely to the problems of method and production and the wage problem in so far as it affects these two.

To operate an office efficiently, it is necessary to make critical analysis of results and purposes, to maintain a certain standard of production or know why it does not exist, and to promote plans working for efficiency. These very things are usually forgotten by the office manager or are deferred to some later time in favor of the other duties more driving and immediate. It is our opinion at The Curtis Publishing Company that these activities are of paramount importance. We believe that they can best be maintained by a corps of specialists trained in the work and retained solely for this purpose.

Several years ago The Curtis Publishing Company began work of this nature. It was soon apparent that it could be most efficiently handled by staff specialists. A group known as the Standardization Division was formed. These people spend their time exclusively in the analysis of work, planning of new methods, determination of standards, working out and promoting of prize offers, establishment of schedules, and in other similar activities. The specialists work in all de-

¹Paper delivered at the Spring Meeting of the Taylor Society, Chamber of Commerce Hall, Washington, D. C., Friday evening, May 3, 1918.

²Secretary, Curtis Publishing Company, Philadelphia, Pa.

partments, both office and factory. In this way we have one department working together for the good of the Company as a whole, working with the knowledge of what changes will mean in other departments, and working for general efficiency, rather than a number of departments working separately and often blindly in so far as interdepartmental relationship is concerned for the improvement of method and quality, or for their own individual curtailment of expense.

This method may lead you to suppose that our Standardization Division has direct authority over our management. This is untrue. The division has no authority whatever. They are given free foot for unlimited investigation, our cost records are open to them, our company problems are theirs—they have the right of appeal. It is the job of the standardization force to "sell" their plans to the management by demonstrating the practicality and economy of them.

In this way, the activities of our managers are in no way hampered, their authority is in no way curtailed, while at the same time the standardization force is kept keyed up to a high standard of endeavor. This method is not the quickest in its action. Evolution never works as rapidly as revolution, but its results are lasting. Many things can be accomplished in this pleasant way without recourse to the doubtful expedient of revolutionary change. Our plan has been in effect eight years. The results which have been obtained, the better work which is being done and the savings which have been made, have won the hearty accord of even those executives who were formerly unsympathetic with the plan.

The most graphic presentation of a point requires that it be presented in money.

During the year 1917 we had four women doing standardization work in the offices. The expense of retaining these workers was less than \$5,000. The cash savings which resulted from their efforts exceeded \$100,000.

The large number of standardizing experiences, both successful and otherwise, through which we have passed, has resulted in our adoption of a more or less fixed method of procedure. I will now describe this method.

1. INITIAL SURVEY AND WRITEUP

The first thing an analyst does in investigating a department, is to note the light, heat, ventilation, furniture, machinery and arrangement conditions. With us the first three usually take care of themselves. The arrangement of the desks in relation to the light

is an important factor. It goes without saying that desks, chairs, cabinets, and other office furniture must be modeled after the work which is to be done, so far as is possible commensurate with a proper degree of standardization, and must furnish the maximum of convenience to employees. It is generally conceded, I think, that the most practical desk for the average office work should not have more than two drawers. Too many drawers offer a ready hiding place for important papers. All desks should be of the flat top type. As to machinery, there are many mechanical devices designed to assist the office organization. Most of them are good, *if they are correctly used*. This qualifying clause is important, however, for thousands of mechanical installations are made which prove to be wasteful and expensive. Too often office executives have given their full attention to finding a method by which a machine might be made to succeed in doing the work. This is not the essential thing. The essential thing is to accomplish the result either with or without the machine, whichever is better. If the work cannot be done without the machine, or if the machine is distinctly labor or time saving or makes for accuracy, it is obvious that we should have the machine. The questions then arise—

Does the machine do the work as well and efficiently as some later model?

Considering depreciation and expenditure, would it be more economical to get other machinery?

The purchasing of any new machinery should be deferred until the analyst is wholly conversant with the work of the department. An installation which looks good where superficially considered may not prove economical when actually in use.

The arrangement of office equipment is important and it is often neglected. Work should flow through the office according to a connected plan. Make a diagram on ordinary cross section paper, sketch out roughly the outlines of the room and the layout of the furniture. A free hand pencil sketch is perfectly satisfactory; slight inaccuracies do not matter. Now indicate the course of the work with a line. It is surprising how often such an analysis will disclose inconsistent conditions. Study the outline and make a diagram showing the proposed changes. The plan should be considered intelligently and thoughtfully and when perfected should be put into use. An analysis of this kind requires but a few minutes and is worth doing from time to time even though no need presents itself.

An occasional shake up in office arrangement is apt to have a good effect. It makes the clerks more alive to their surroundings and does away with ruts.

In studying the flow of the work the analyst should have learned the purposes for which the department exists, and in a general way its methods and problems. There is a tendency toward intricate method in all offices. This appears to be a common failing. The analyst should keep this in mind in reviewing the work. Intricate checking methods, devised to prevent errors from "slipping by" are usually ineffective; the simplest ones are the best. The ideal of office management should be to prevent errors from happening. Errors not made do not present troublesome problems; prevention is better than cure. Proper study followed by the installation of balances, fixing of responsibilities and some form of incentive, can be trusted to prevent mistakes. Checking complicates and slows up office processes, sacrifices the determination of personal responsibility, and thereby jeopardizes the very foundation of office efficiency. It is expensive and it usually fails in its object. Checking in some form or other, however, forms a great portion of the work of many offices. It is a matter of principle; if prevention is better, then every effort must be placed upon correct work in the first place. Proper balances, high bonus with heavy penalties for errors and the positive establishment of responsibility will accomplish this end. Where this is not done the usual procedure is to turn to some checking expedient. Unfortunately one check seldom stops the trouble, so perhaps a second checker checks the first and still mistakes "get by." I have seen as high as four consecutive checkers going over work to insure accuracy. Even then mistakes were slipping through. Checking is expensive; it is disorganizing, breeds bad spirit, slows up work and does not accomplish its purpose. There are exceptions, of course, and there are places where inspection is needed. Checking and inspection should, however, be kept strictly for the exceptions and should not be used as a general "cure all."

With this in mind the analyst proceeds with the investigation. All office problems are approached in the following manner although obviously common sense and expediency dictate the actual course of progress.

Formal Procedure for Standardization.

A. Personnel.

- (a) How many workers are there?
- (b) What is the method of payment?

- (c) Determine true costs, in detail and in total?
- (d) What is length of service of each?
- (e) When did each receive last increase?
- (f) General impression.
- (g) Is supervisor capable and sympathetic?

B. Work

- (a) Study character of work.
- (b) What does each person do?
- (c) Determine true costs, in detail.
- (d) Determine present production when possible.

C. Purpose and History.

- (a) Study history of activity.
- (b) Think over purpose. Is it genuine?

D. General Plan for Future.

- (a) Can activity be discontinued?
- (b) Can it be combined with other activities to common advantage or with reduced cost?
- (c) In view of the purpose of activity, what general changes should be made considering existing activities and new activities?

Analysts must get all this information themselves, directly from the cost records, observation of the workers and common sense. As to the purpose, there is often a surprising lack of understanding upon the part of minor executives as to the aim of their activity. People seem to develop blind spots in this direction. It may be interesting to know what they think, but what the analyst thinks is far more important. Cost information should be taken with a grain of salt also. Executives naturally desire low costs, and sometimes they so handle their charges that the actual expense is not evident. This is consistent with entire honesty upon the part of executive.

A careful analysis of the purpose of the work is important. If the work can be combined or entirely done away with, this move should be taken. Analysts frequently discover that work is being handled as a separate function when it could to better advantage be combined with related activities. It is perfectly possible even that the work may be the relic of some former activity and is continued though it has outlived its usefulness. The maintenance of these obsolete practices is more general than one would suppose. Once office work has started, it gathers a momentum

which may keep it going long after its purpose is forgotten. Usually in these cases there is no means of measuring value against cost, or it has not been done. Before any preparation of new method is attempted, it is fundamental that the purposes of activity be thoughtfully weighed and that useless and profitless objectives be discarded.

When the survey is reasonably complete the analyst must write up an analytical report of the situation. This will clarify the matter, compel complete analysis and bring out many points which otherwise would be overlooked. The importance of this written survey cannot be overemphasized. It is fundamental.

Once the aims of a department are determined, the analyst is ready for the real constructive work.

2. CONSTRUCTIVE REPORT

A second report is now written describing the proposed changes. In this the following rules govern.

Rules for Standardization.

- (a) Take care to accomplish only essentials and to do this at the minimum cost.
- (b) Standardize method of work. Time studies may be necessary to determine best method.
- (c) Determine operations.
- (d) Determine operation units.
- (e) Provide means of securing and maintaining records of Time Production and Cost by Operation.

The constructing of such a plan is no simple thing. It is the product of the skill, experience, and common sense of the analyst. It is obvious that the new method should accomplish the result simply and at a minimum cost. The result should come direct from the sources of original information. Every intermediate step eliminated means the saving of expense, quicker results and fewer mistakes. The determination of operations and operation units will be discussed later.

As for the records, do not accumulate daily; if you can do so conveniently, weekly or monthly. In records to be used solely for information do not be insistent upon extreme accuracy unless it is really necessary. We waste thousands of hours in this country every week balancing to a penny managerial cost statistics, when a mere record of production would be of greater value.

The creation and maintenance of such statistical in-

formation as is needed to properly supervise standardization work is a subject which would require a paper in itself to describe. That such records are very necessary goes without saying. Conditions alter cases, however, and individual methods differ. It is probable that every organization must work out its own solution of the problem.

One need is common to all institutions, however, in installing standard methods, and that is the proper and complete records of cost conditions before and after the installation. Without such records it is difficult to judge the success of plans, and almost impossible to accumulate those facts which later may be of much value in "selling" similar methods to hesitant managers.

In planning standard practice the end which we strive for varies with the purpose of the work; the method which we adopt varies with the character of the work; the kind of records necessary vary with conditions; the determination of operations is everywhere the same. It is the breaking up of the activity into component parts, having constance factors or units measurable in time. The division may be made on either the "sectional" or "consecutive" basis.

Manufacturing today is a sequence of consecutive operations. A printshop sets type, makes plates, places them upon the presses, does the printing, folds, collates and binds. Workers are employed on one type of work. Each operation is necessary to the next, but each is separate. Practically all office work can be handled in this way. Where this is done properly, high technical efficiency will result, production should be high and actual errors low. For most office work the consecutive operation plan is desirable. It should always be used where work is of a mechanical nature as is typewriting, circularizing, and machine operating. In this way each clerk is a specialist on one or two operations. The work is simple and the workers easily trained. However, in cases where clerks should use judgment and initiative, as with bookkeepers, the consecutive operation plan, while workable, is frequently unsatisfactory. High production and few errors are to be desired, but intelligent and thoughtful handling of the records is simply vital. The saving in expense accomplished by the consecutive operation plan would offset but a small fraction of the damage which might result from the unintelligent handling of an important account. Because of this situation it has been necessary to develop a plan which will give to the worker the environment and knowledge which she needs and which will provide an incentive both for

intelligent work and for high production and few errors.

The answer to this need is the "Section Operation" plan. Under this arrangement each clerk assumes all work (all operations) within some definite section, either territorial or otherwise. The particular section becomes her absolute responsibility and her success or failure is judged by the results within the section. The unit in this case is some constant factor (as the number of accounts handled) although the clerk has many duties which are not always in direct relation to the unit.

It is necessary at times to make use of this plan. In our experience, however, we have found that the work can usually be broken up into a certain number of operations, each with its unit of production, and that in this way we can measure the production of the component parts of the work. The clerk has charge of her section but assigns her work to various operations. This allows a fair measurement of production and retains all the advantages of the sectional plan. The clerk's knowledge and memory of conditions does away with much duplication of effort and insures against errors. Responsibility for all actions is fixed.

The determination of production units is usually very simple; for instance in letter filing it is "one letter" and in setting type "one piece of type." At times it is necessary to have a point basis standard where there are two or three factors which are not sequential. Take an actual Curtis operation such as the entering of sales reports to ledger sheets, filling out a card and a letter and addressing letters to all agents who have fallen below their usual quota. The count is—one ledger sheet handled—1 unit.

one letter and card —11 units.

The letter is a variable unit. It has been determined by time study that it takes eleven times longer to address this particular letter than to handle a simple sales report. In such circumstances a point basis standard is the only fair standard to adopt. Merely as examples of method I cite below operations in use at the Curtis Company on simple forms of activity:

Transcription

Operation—Transcribing.

Standard	{	200 units (or 100 sq. in.) per hour—\$10.00
		for 44 hours.
		220 units (or 110 sq. in.) per hour—\$11.00
		for 44 hours.
		240 units (or 120 sq. in.) per hour—\$12.00
		for 44 hours.

Unit—One meter unit (or $\frac{1}{2}$ sq. inch.)

Subscription

Operation—Monthly Addressing.

Minimum Wage \$8.00 per week.

Standard	{	\$10.00 Salary—standard 63 per hour.
		\$11.00 Salary—standard 69 per hour.
		\$12.00 Salary—standard 76 per hour.

Unit—One envelope addressed.

After the essentials of the work are decided upon, standard methods settled, operations and operation units determined, and a way of securing and maintaining the records worked out, a report is written and submitted to the Manager. (This is really a sales brief.) If the suggestions even in a modified form are adopted, the analyst proceeds to put them into practice. The prime thing is to get the principle accepted; if this is done the details will care for themselves.

3. NEW PLAN IN EFFECT

- (a) Write definite working instructions for each individual concerned.
- (b) Give close personal supervision during installation.
- (c) Gradual perfecting of plan.
- (d) Scheduling.

The writeup of the plan and the drafting of working instructions and orders are two separate matters. The instructions must take the form of a brief but complete memo prepared for each individual affected by the change. Memos given to supervisors or managers are not sufficient. Instructions must be complete for the individual but should usually describe only his or her activities. They should not cover ground outside the field of the individual, except possibly to briefly describe the purposes of the work.

The analyst must personally supervise the installation and settle many matters involving questions of justice. After the plan goes into effect other slight changes may be found advisable. When the plan is in working order, a detailed description written up according to some set formula should be filed in a book or encyclopedia containing accounts of all office standard practice. The instruction sheets may be filed also but they will not take the place of the description written in a connected form and dealing with the work in its natural and logical sequence.

As the production increases it should be possible to regulate the flow of work through the department by a schedule system, routing the work so as to avoid a peak and valley condition both in the department under consideration and in allied departments. Properly scheduled work means no delays, the lowest cost and the fewest mistakes.

We now have a smoothly running plan, each person with certain set tasks to accomplish, and a definite measure of each clerk's production.

4. ESTABLISHING INCENTIVES

It is perfectly obvious that a girl who does twice as much work as another should receive more remuneration. It is also perfectly obvious that if there is some incentive, more people will be efficient. No plan aiming for efficiency is complete until the problem of incentive has been solved. Average office workers under average office conditions may be relied upon to produce 50% or less of the volume of work which they can produce without undue effort, working under properly installed incentives. This statement applies to clerks and machine operators alike. Similarly they can be relied upon to make twice as many errors or even more when they have no idea of the money value of these errors. Whether the incentive to good work is some form of bonus, high salary or piece rate, is not material. The point is to know what production is and what it should be, and to accomplish the desired result. It is the Curtis plan to establish by time study and study of records a certain standard production for each operation which will be expected of each clerk working for a certain salary rate, a certain penalty for errors, and an incentive for good production. If the clerk does not reach the standard set, no deduction is made from her salary, but if she exceeds it she is paid for all production above the standard at a certain fixed rate.

Standards—Procedure

- (a) Study past records.
- (b) Study "Special Time" and "Idle Time" particularly. (Constant pressure should be kept here and both should be cut to the minimum.
- (c) Make time studies of workers.
- (d) Determine standards.
- (e) Determine incentive — bonus or prize offer.
- (f) Make offer, promote and follow up.

This is the usual procedure for all standardization. In setting these standards there are a few precautions which should be kept in mind. It is better to set standards too high than too low; it is easy to lower, but very difficult to increase them. Our experience has been that clerks under fairly good supervision are doing about 50% of what they can do without undue

effort, and that the 100% mark is about 25% less than the peak which can be secured during a paced time study hour. These figures are general and are mentioned merely as an index to the situation. In settling standards we attempt to set the 100% point slightly below its true position. We have found that employees who can slightly exceed this figure have a pride in maintaining their record of over 100%, and that this pride often causes them to hold above the figure when conditions are such that otherwise they might show a considerable slump. I am purposely not quoting the standards or bonus rates which we use at the Curtis Company. We receive letters every week asking for this information, but the writers of these letters do not understand their subject or they would not ask the question. Standards vary with conditions and our conditions may be very different from those in another establishment. Standards can be determined only through time study, analysis of the work and of the records of past performance. To install standards set from another's experience would be almost an assurance of failure. The form which bonus offers take are legion. Conditions dictate requirements which are to be met and offers are planned to fulfill the need. The literature of scientific management contains many plans for the drafting of bonus offers. I shall, therefore, make no attempt to describe the different plans which we use at the Curtis Company.

The announcement of the offer, its installation and the publicity and follow-up work which must be carried out, are matters which vary with each different situation. It is exceedingly important, however, that effort should not cease with the announcement of the offer. Care should be taken that each worker understands the proposition and knows what her opportunity is. No matter how clear and explicit the announcement may be, there are always many who do not understand it and who do not sense the significance of the offer in dollars and cents.

In preparing bonus offers the problem of how to handle errors is constantly presented. There are two solutions. Either make a charge against bonus for each mistake or determine the volume of errors, establish a "standard" and offer bonus for reductions. Our experience has been that the first method is much better. When standards are set and the bonus offer is decided upon, the question of errors must be carefully considered. True cost is not merely the actual cost of the time spent in turning out a certain production; if there are errors it should include also the cost of handling and adjusting the proper proportion of mistakes

and a careful estimate of what those mistakes cost the house. The extra cost which will be added because of this factor will usually be a big one and it should now be possible to offer a very handsome opportunity for bonus earning. The offer should contain a heavy penalty for errors. This method has a double advantage. It brings the seriousness of mistakes home to the worker very emphatically. It costs her real money if she is not careful. In this regard the makeup of the pay envelope is important. A pay envelope reading as follows—

Wage	\$10.00
Bonus	4.00

Total Earning	14.00
Charge for Errors	3.00

Amt. Enclosed	\$11.00
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is surely more effective than one reading—

Wage	\$10.00
Bonus	1.00

Total	\$11.00
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After a brief period of operation it will be found that the workers are divided into two classes—

Those who exceed the standard.

Those who fall below the standard.

The bonus earners must be encouraged to reach a high percentage and to stay there. Heavy bonus will be the permanent incentive, but pride can be used to good effect.

The advertising of an offer both during installation and thereafter is very necessary. It is of great importance that the consciousness of the individual worker should be really reached. At the Curtis Company a bulletin showing the name of each worker, followed by a gold star if 100% or better, a blue star if between 90% and 100%, and a red star if less than 90%, has proven very successful. The bulletins cover a period of from three months to one year and are posted weekly.

The need for encouraging high average workers to maintain their positions is obvious. If the offer is to be truly successful, however, it is of even greater importance that the non bonus earner be raised to earning ability, for until she reaches the production required for her guaranteed salary rate she is an unduly expensive individual. Peculiarly there seems to be a lack of comprehension of this need in many offices. Much pride is felt in the earners but little attention is given the less successful workers. Pride and the bonus

furnish but slight stimulus with such workers. The cure comes through personal study and instruction, and through some form of prize as an incentive.

Take for instance, an office worker who is guaranteed a \$12.00 weekly salary. Her weekly production is 2000 units and the standard is 3200 (for the sake of simple explanation let us assume a straight piece work basis.) The clerk is receiving \$12.00 weekly and is earning \$7.50, a loss to the establishment of \$4.50. Before she can make any bonus she must increase her production to 3200. To a clerk working at a rate which she believes is about her best, an increase of 1200 units seems almost impossible. However, if the clerk can be made to understand how simple it is to make the standard and to maintain it, our problem is solved. To encourage these persons who are less efficient we offer various forms of special prizes. One of the favorite methods is to offer a cash prize for each increase of five or ten points in efficiency over the clerk's best previous weekly average.

In the above instance the jump of 1200 points before bonus earning might seem not worth the trouble, but where an offer of possibly \$1.00 extra for a jump of 200 points is made, it is easier to get real effort from the worker. In such cases everyone gains. Based on the workers' 50% production, a jump of 200 means a company gain of \$1.20; this after paying the \$1.00 prize is still a gain of 20c, and in future weeks if the increase is held the full amount is company gain. One of the special values of this prize plan is that it gives the workers a "taste" of extra money and they usually move step by step into the bonus earning class. The offer is never withdrawn, but at about 100% the possibility of further increase ceases.

This is a very simple example, but the same plan is easily applied to more intricate bonus plans. The trouble with many schemes which start with small earnings at 66% or 70% is that the amount offered is so small that no real incentive is offered at the very time when it is most needed.

In brief, the standardization work consists in revising conditions and methods after investigation, installing new methods, supervising the installation and doing whatever follow-up work may be necessary to insure efficiency. The actual permanent maintenance of the plan is handed over to the operating departments.

Let me review the advantages which we secure through our corps of standardization specialists.

They insure uniform methods throughout the organization.

They bring in the valuable outside viewpoint without friction.

They spread information of methods and facts which have been found valuable in other departments.

They relieve managers of much detail which they have neither the time nor inclination to attempt.

They centralize records of expense and results.

They concentrate standardization in the hands of specialists.

Although I feel that the form of our department has much to do with our success, and know it to be true that improperly handled standardization may cause serious loss of good will, the fact remains that the point which I wish to make is that the use of standard methods and the bonus system is effective in office work.

It results in other than economic advantage. It appeals to the sense of fairness of employees, for increased production means increased earnings. Increased earnings are the strongest incentives to the employees for good work and stability. The realization of the fairness of the proposition and the increased earnings together claim the good will of the individual toward the employer. The attitude of the individual employees forms the general "esprit de corps" of the organization. For the employer there is need for good work and good will. Good work affects both quality and quantity of production; good will affects labor turnover, and solves to a large extent employment problems. From another point of view, standardization increases the efficiency and usefulness of the individual; it teaches workers to work. It has other than money value to the employees. It teaches them to increase their production, thereby helping the ignorant to overcome obstacles and encouraging the shiftless and lazy to have pride in their work. If we succeed ever so little in affecting the general "esprit de corps" of the organization and assist in the upbuilding of our employees, we are accomplishing much.

Though our plan works for the general good of all concerned it is economical; the adoption of it has been of benefit to our stockholders. It does away with useless processes and overlapping of effort. It makes effort uniform. It reduces supervision. It insures a certain rate of production from employees, which may be counted upon. As I have already said, our savings on office work alone for 1917 were over \$100,000. Despite this economy the appeal of the work could not be so great as it is if it were not for the human element; with our knowledge we help other workers do better things.

War conditions demand a constructive industrial program. This audience is composed of men who are not mere theorists, but who are practical industrialists. There is no longer a question whether you can afford to standardize; the question is, can you afford not to? As one of our friends says, "You pay for it when you don't buy." The Curtis plan is a success. I trust it will have currency.

DISCUSSION

MR. W. H. LEFFINGWELL:¹ It gives me considerable pleasure to lead the discussion on this subject tonight for the simple reason that Mr. Fuller has given the whole matter so clearly and so plainly that I will not have much to do.

I have only a few suggestions to offer. I have had about twenty years experience in office management, and I know only too well the breadth of the subject, and of course we could not expect a complete answer to all sorts of things that associate themselves with these ideas in such a short paper.

Mr. Fuller has described scientific methods in use in a huge office, of which there are few counterparts in the country. By inference these methods are valuable to the small office; but some of them, I fear, might seem difficult of accomplishment to the management of a small office, say under 100 employees. That, by the way, is the ordinary office—under 100 employees. For this reason I have always made it a practice to hold to certain definite principles rather than methods. The principles always hold good, no matter what the size of the office, and the same methods rarely occur in any two offices.

For example, Mr. Fuller has emphasized the importance of consecutive operation, and says that practically all office work can be handled this way. If he were to say that the principle can be utilized in practically all offices I would agree with him. I would go even further and say that this principle has been in operation to a limited extent in many large offices for years. In my own experience, however, there are cases of small offices where it is extremely difficult logically to carry out this principle and obtain the high efficiency that Mr. Fuller speaks of.

In many small offices it actually would not be economy to do so. However, I presume Mr. Fuller's experience has been mostly with large institutions, and he naturally thinks in large numbers. He has pointed out exceptions in the bookkeeper and other clerks who

¹President, W. H. Leffingwell Co., New York City.

must use initiative. These exceptions are sometimes the rule, in small offices.

This criticism is not intended in any way as a refutation of the principle he has laid down. I thoroughly agree with it; but it must be used with discretion.

There is another point that is to be considered, and that is whether or not what the company is interested in is lowness of cost, or service to their customers. In some places they use what they call the unit system. They have each one of the operations (all of the operations connected with, say, an order, or with putting something through) all together in a small unit. In that way the work travels through all these units very quickly, much on the progressive assembly style. This method gives quick service, but it is not cheap. When the work is sent from one department to another, it sometimes takes a great deal longer than it should for the work to go through and get it on its way, if it is to go back to the customer. This method is cheap, but it doesn't give the best service. In this connection I might say that I at one time found that in a manufacturing office it took an order to get from the sales department into the factory an average of ten days. There were some cases where it took twenty-five or thirty days, which was not on account of consecutive operations, however. This "horrible example" emphasizes the importance of not letting red tape run away with this class of operations.

Since Mr. Fuller has not described the planning department, it would appear that he has reference in his paper mainly to operation of fixed routine. It has been my experience that the scientific methods of analysis described by him result in operations which require initiative and judgment. In fact it is in such cases that the great value of scientific management is shown.

There are many offices which are so full of irregularities that they seem almost planless; yet, standardization of methods, principles and policies, act magically in straightening out what appears to be a hopeless maze.

There is just one word in Mr. Fuller's paper that does not strike a responsive chord in my philosophy, and that word I notice he has cut out of his paper since I first had the pleasure of reading it. But I am not going to let him shut me off that way. That is, where speaking of procedure for standardization, under "special time" and "idle time," he said in the original outline of the paper, "Watch out for camouflage" I do not deny that it exists, but whatever may be the case in factories, I believe that by far the great-

er loss in office management is due to the management's faults rather than to those of a stalling or shirking clerk.

It is so easy to condemn a worker, and so hard to increase his efficiency. It is so easy to call him a staller and so hard to plan work so that idleness cannot exist except in rare instances. Many managers adopt the easy course. For this reason, perhaps to be different from the mob, I adopt the difficult course. I never allow my assistants to give me that excuse; I always assume that the worker wants to do a good day's work, and in fact I believe that under proper conditions almost everybody does. When I find a clerk who evidently is not doing as well as he should, I assume either that the work is not interesting or the clerk is not interested in the work. In the former case I endeavor to find the point of interest for the worker, or in some way to make him more interested; and in the latter case I endeavor to find the kind of work that the clerk is interested in and if possible transfer him to it. One of the greatest opportunities of managers today is in learning how to get the worker interested in his job. It can be done and it pays bigger dividends than a still hunt for shirkers.

I have found that one of the greatest incentives in office work is pride and emulation. The star chart mentioned by Mr. Fuller, and any other methods of bringing out the team spirit, are excellent.

On account of lack of time, Mr. Fuller has dwelt rather lightly upon his methods of training. This is a point in which we would all be interested. He has, however, gone so fully into other matters and has covered so much ground, that we shall perhaps have to wait for another time to hear about this all-important subject.

Neither has Mr. Fuller told us any of the wonderful things he must have discovered in his motion study. To me this is one of the most interesting parts of my work. So often do we find great opportunities for savings in the most unexpected places.

In all the trades, and many of the mechanical operations performed in industry, there has been for years a process of elimination, which makes for skill. If students of motion have found it possible to still further improve these operations, it is much more possible to make a showing in the office. Clerks do not have to serve an apprenticeship; there are few places where they are scientifically trained, and few trainers.

If I may add a word of mine to corroborate the facts pointed out in Mr. Fuller's paper, I will give, as briefly as possible, some of the things that have come

under my observation which prove the essential correctness of the statement that scientific methods can be applied with profit to office management.

Dr. Taylor's four principles of scientific management have had a great influence on my work. My experience shows me that they are applicable not only to office management, but every day I see examples which emphasize the fact that they are applicable to management of all sorts.

These principles are:

1. The development of a true science.
2. The scientific selection of the workman.
3. His scientific education and development.
4. Intimate coöperation between the management and the men.

There is no need of my endeavoring to prove the correctness of these principles to members of the Taylor Society. It may be interesting, however, that I have found that most of the mechanical parts of scientific management, used by Dr. Taylor, are applicable with very little modification to management in the office.

For example, *Time Study*. Dr. Taylor in his book "Shop Management," page 176, says:

"There is no class of work which cannot be profitably submitted to time study by dividing it into its time elements, except such operations as take place in the head of the worker; and the writer has even seen a time study made of the speed of an average and first-class boy in solving problems in mathematics.

"Clerk work can well be submitted to time study, and a daily task assigned in work of this class which at first appears to be very miscellaneous in its character."

It is a never-ending subject of interest to see what can be accomplished by this form of analysis. Not only is it applicable to motions of the hand or body, but to many motions of the brain, or mental effort.

Mr. Fuller's statement that the average clerk is 50% efficient is not at all exaggerated. It is perfectly simple to double the efficiency of the average stenographer or typewriter operator. Few know how to insert a piece of paper in the machine without loss of effort; few write more than two or three words without consulting their copy; few know anything about conservation of muscular effort. Analysis not only shows that the worker can accomplish more, but actually with less effort, both manual and mental.

In one place I found twenty girls in the circularizing room using ten different methods of gathering and inserting circulars. The output varied from 400 per hour to 800. With the method evolved by time study, a standard of 1,000 was set, and some few workers

found it possible to perform as many as 1,500 an hour.

In a mail-opening department time study analysis made it possible to increase the operation of opening letters (taking them out of the envelope, marking and pinning) from 100 an hour to 250. By the use of a specially designed table, this was still further increased to 310 per hour.

Addressing of envelopes is usually performed at the rate of about 100 per hour. Time study made it possible to increase this to 240 an hour.

In many operations, supposedly entirely mental, analysis shows that the same thoughts, the same decisions, are repeated many times, and standardization makes it possible to save much mental effort. Analysis shows that a large proportion of the time required on office operations is consumed in making decisions. For some reason the mental reaction is slow. It is possible to teach clerks to decide quickly and thereby increase output.

Standardization. This great principle has so many applications that it would be impossible even to mention more than a small number of them.

Standardization of printed forms, in size, shape, color, paper, etc., will save some concerns many thousands of dollars annually.

Standardization of methods of performing work of all kinds is especially applicable in the office.

Standardization of tools and equipment, of furniture, of surrounding conditions, all mean much in the office.

The Planning Room. In small offices, a special planning room of course would be ridiculous, but planning itself is not.

The average office is planless. The average executive has no definite plans. Coördination does not exist in thousands of offices.

A planning room is not only feasible in large offices, but becomes almost as indispensable as the factory planning room, though of course its functions are somewhat different. In all large offices there is a waste of time due to scarcity of work in one department or another. The planning room can utilize this idle time by placing the clerks where they are needed.

The Exception Principle. This principle is of the greatest value to office as well as to factory executives, and also of the greatest value in handling much clerical routine work. For example, in one place the addressing of inquiry letters was a very uncertain operation, due to the fact that many letters in the customers' handwriting were indecipherable, or nearly so. We established a Nixie clerk, similar to the Nixie depart-

ment of the post office, who became an adept at handling such letters. The other clerks were then instructed to throw aside all letters which could not be read instantly, and spend no time in trying to read them. These exceptions were then deciphered by the Nixie clerk. The result was an immediate increase on the part of all.

Slide Rules and Other Time-saving Implements. There are no problems in office work similar to that of cutting metals, and such slide rules are not necessary; yet there are many cases where special slide rules can be constructed, and of course all percentage figuring and such cases of multiplication and division can be performed on the ordinary slide rule.

There are many cases where labor can be saved by the use of computing tables especially made, charts, and calculating machinery. Mechanical bookkeeping is a very common thing in offices nowadays, even where no pretense of scientific methods is made.

Instruction Cards. The worker's instruction card is very useful in the office. The office manual is also a great aid to standardization of methods. The book of standard practice mentioned by Mr. Fuller is of great value, yet very few offices have anything approaching it.

The Task Idea. This is most successful, even in jobs which at first seem difficult to measure accurately.

Routing and Scheduling. This principle is also very important in office management, and yet little thought of by unscientific managers.

Cost Systems. An office cost system is of great advantage, but just about as many offices as factories go without one. Few executives have any idea of the cost of clerical work, and little constructive thought is given to cost reduction. It is astonishing but true that very few office managers know how many letters a typist can or does write, how many entries a bookkeeper can or does make, or how much of any kind of clerical work can be done.

All of these things work and work well in the office.

I have also found that not only do Dr. Taylor's principles apply to office management, but that the same method of analysis applied to sales development brings the same satisfactory results. My associate, Mr. M. E. Ream, has done some very remarkable work along this line.

One great difficulty I find in attempting to install scientific methods in the office is to get the company to understand the full significance of the term. They do not realize that scientific management means something more than a bonus system or piece rate. Few have

any conception of the possibilities for increasing their business by bettering their methods, their organization, and their control.

They have all heard of remarkable results of bonus or piece work systems, and many imagine that all that is necessary is "to find out how long it takes" to do a piece of work, and then set a price on it.

When they have established piece rates by such unscientific methods, they imagine that their work is finished. In one large office in New York a bonus plan is in operation based on no standards at all, but merely the general average of efficiency. Employees are paid a bonus for beating the average. As the low ones increase their efficiency, the average naturally is raised and the bonus per worker decreases. In other words, the more that is done, the less the worker gets for it. This same company argues that a high rate of turnover is a desirable state of affairs.

We are only beginning to appreciate the breadth of Dr. Taylor's fundamental ideas.

The broad outlook that these ideas give the manager is far more important for the future development of his business than the savings that may be made as a result of the application of scientific principles, even though these savings are usually out of proportion to the cost of installation.

MR. CARL G. BARTH:¹ I don't know whether you have heard this story or not. It is a story of a man not knowing what he was doing. I find again and again that people are doing work and do not know what they are doing. But here is the extreme case.

A railroad president had an efficient system for his men. It was principally a record of attendance. He found a man who had never missed an hour from his work in thirty-three years of service. He had been the most efficient man on the road, apparently. In this story the president is supposed to be in New York and this laborer up in the mountains of Vermont somewhere. The president sent for this employee; he wanted to see this most efficient man. So one day in came a great big Irishman, in response to the president's call, and he was let into the private office and the president of the road learned who he was. He said to the Irishman, "Is it true that you haven't missed a single day from your work in thirty-three years?" "Yes, sir", said the Irishman. "Can that be? What work have you been doing?" questioned the president. The Irishman replied: "I have struck every wheel of

¹Consulting Engineer, Rochester, N. Y.

every train that has come into our station and stopped for the last thirty-three years; I have hit every wheel with my hammer." "What do you do that for?" asked the president. "Well, I don't know," said the Irishman.

He had been doing that for thirty-three years, and he did not know what he was doing it for, and he had endangered the life of the passengers during those many years because although he had been hitting the wheels of the passenger cars with his hammer, he did not know that he had to look out for a peculiar noise that the wheel would make if there were a defect.

I am also reminded of a story of the man who poured water in the rat-hole.

Before telling that I want to say that I am sorry Mr. Fuller did not give more credit to Mr. Taylor. All the good things come from Mr. Taylor—a few good things from the Bible, but most of the good things from Taylor. I was delighted with the second speaker, that he did give Mr. Taylor so much credit.

Now, to tell my story. There was an investigation over in England of a navy yard, and as a member of Parliament was going along past an old building he saw a man sitting in a chair with a bucket of water, pouring water into a hole in the ground, a dipper-full at a time; every now and then he would take a dipper-full of water and pour into this hole. He asked the man "What in the world are you doing?" The reply was "I am pouring water into this rat-hole." "What are you doing that for?" "I don't know, but I have been doing it for twenty years." Following the thing up, it was found that it was true that he had been doing that, it was something that had been started simply as an emergency measure; twenty years before they wanted to keep any rats from coming out of this rat hole, and they started this man pouring water into the hole to keep the rats from coming out, and sure enough he had been doing that for twenty years.

MR. L. A. MILLER:¹ Mr. Fuller in his paper has very ably presented the necessity for and the benefits to be derived from the application of scientific principles to office management particularly as it relates to routine methods and the wage problem. So far as I am able to judge, he has made no statement that is not absolutely true and borne out by his years of experience with one of the most up-to-date companies in the country. The entire paper is based upon a conscientious and comprehensive study of clerical routine, and unquestionably such study will inevitably lead to

a practice which will finally end in greater efficiency through the application of scientific principles.

The conditions brought about by the war are very acute. These same acute conditions should aid materially the companies where increased efficiency is possible and where operations have not been standardized to any great extent. Approximately 125 or 12½% of our office force have been called to the colors; but few of these men have been replaced. There are two reasons for this; first, those remaining have been thoroughly impressed with the idea that it is their patriotic duty to take over the additional burden imposed by the enforced reduction and they have been very glad to do this; second, cutting waste effort has been absolutely imperative. Of course, an organization where high efficiency has obtained could not realize the benefits as we have. I consider that we are fortunate in being forced to action.

Beyond a doubt, clerical efficiency under proper study and incentive may be increased 100%. It seems, however, that only the simplest operations have thus far been standardized, and I think this is largely due to the fact that even though a study has been made of all the detail which enters into the operations, the unit for measuring production has been either obscure or fluctuates to such an extent that it would appear impracticable to standardize. This leads me to the statement of a theory with which many might disagree; namely, that it is possible and profitable to standardize operations and offer incentives where production and the productive unit is not considered except as a basis for work assignment.

To illustrate: There are many clerical operations where satisfactory records may be kept of neatness, attendance, punctuality, deportment and accuracy; high efficiency in these respects will in all cases be reflected upon production. I have no doubt many will feel that such a plan is entirely too unscientific, but if we wait until we can actually measure each unit of product of clerical effort as definitely as we can measure the product of a machine, we shall be very slow to improve clerical efficiency. If I were to state the one reason which has attributed most of all to the delay in applying scientific principles to office management, I would say that it is on account of the varying product and the obscurity of the unit. In the hundreds of clerical operations which the Curtis Company has standardized, under Mr. Fuller's direction, I am sure in a large percentage the productive unit is more or less determined by the law of averages. In other

¹Office Manager, Willys-Overland Company, Toledo, Ohio.

words, while the unit itself may be very definite, the amount of effort involved in the detail varies considerably from time to time. I know that a constant variation one way or the other would lead to a revision of standards, but I am very sure that the fact that fluctuations in effort occur has not deterred Mr. Fuller and his Standardization Division.

It has been my experience that duplication of effort, lost motion and general inefficiency in large clerical organizations, are to be found principally in the inter-departmental routine and in those general activities which are common to all departments. A thorough analysis will point to the proper reorganization wherein all of the general activities are consolidated in one department; this department may have as many as twelve distinct divisions. The organization of such a department, to use a common military term, is establishing an "Army of Manoeuvre;" and under proper direction the force of such a department may be quickly shifted. This means that the peak load of any activity may be efficiently handled by a shifting of "reserves," and such an organization will result in economies. As I understand it, one of the first scientific principles to apply to any management is that of proper organization.

Too much stress cannot be laid upon the necessity for a thorough study of all routine and the written form of standard practice. It is surprising how many useless or duplicated operations develop when a study is made and the details are actually written. It seems that such items of inefficiency fairly protrude from the paper when they are in written form. Mr. Fuller has clearly emphasized this point.

Due to the rapid growth of many organizations, there are found in them evidences of inefficiency that may be traced directly to the lack of proper standardization of hours of work and rates of pay. Even though clerical operations may be standardized and the efficiency of the operators increased by incentive, if there is discrimination in the basic salary and the hours of work, there is a primary cause of dissatisfaction, which, whether it can be measured or not, results in lower efficiency than would otherwise obtain. I recall distinctly a large office organization of from 1200 to 1500 employees where one department in particular paid rates to stenographers which were in excess of those paid in other departments; and in addition to this, those same stenographers reported one-half hour later in the morning. They worked seven and one-half hours per day as compared with eight hours worked by the girls in the other depart-

ments. This, of course, is an injustice and the effects of such discrimination are very bad. It frequently occurs that different rates are paid for the same class of work in various departments or even in the same department, due either to the sentiment of the department manager or to the fact that a scheming clerk has gained an advantage by methods which should not be recognized. Until the hours of work are made uniform and the rates of pay properly classified so that all discrimination in these respects is eliminated, standardization will not bring the best results.

I like very much Mr. Fuller's organization of a Standardization Division composed of specialists who work with the departmental managers to improve conditions and obtain results. I entirely agree with him that the work of such an organization is lasting when once installed. However, there must be times of very great discouragement when the department manager is permitted by the general manager to be obdurate. So many department managers feel that a study of their routine by an outsider is a reflection upon their ability. To-day I think that department managers are becoming broader minded in this respect and are only too willing to secure every assistance possible in order to bring about the desired results. I note Mr. Fuller has stated that it is the job of the standardization force to "sell" their plans. I can fully appreciate that under some conditions and with some people such selling would require the greatest talent in salesmanship. It must, therefore, be necessary to give standardization plans executive backing, and this no doubt, Mr. Fuller secures.

I think that many companies are slow to introduce scientific principles into their office routine because they realize that it would appear ridiculous to make the attempt when their working conditions are so very poor or inadequate. I have recently had the experience and pleasure of seeing a large office force transferred from the poorest conditions to the best that might be obtained, through the advice of specialists unhampered by money restrictions. The increased efficiency resulting therefrom was noticed instantly, and the opportunity to reorganize and coordinate the routine of the various departments resulted in large savings.

There is one statement in Mr. Fuller's paper upon which it might be well to have further light, and that is the statement that an "occasional shake up in office arrangement is apt to have a good effect." I am not

sufficiently familiar with what he has in mind to agree entirely with this statement. Surely if the office arrangement is the result of analysis and is the best possible arrangement under the existing condition, Mr. Fuller would not recommend shaking it up just for the possibility of good effect. If operations of routine are standardized, I am inclined to think that any considerable "shake up" would affect the standards; or if the "shake-up" would simplify the routine then, of course, such rearrangement should be made before standardization if the conditions were known and would at that time permit.

There are many who object to the application of scientific principles and incentives to office workers on the ground that it will result in errors. This is absolutely false and it has been my privilege to prove it continuously. There is hardly an exception to the rule that upon operations properly standardized the more efficient a clerk becomes, the fewer the errors, or percentage of errors made. I have never experienced a case where this is not true, the reason being that under standardized operations and a proper incentive, there is a correspondingly greater amount of interest displayed and much greater concentration upon the details of the work. It isn't the volume of work that causes errors, it's the voluntary interruptions on the part of the worker. Where the proper incentive is offered, these interruptions are minimized and the conscientious, steady worker who may not be phenomenal as to speed will reach the goal of high efficiency.

One of the most important facts that Mr. Fuller has so ably brought out in his paper is that of the necessity for complete and accurate cost statistics before scientific principles are applied. I do not recall a case where it has not been advisable to have such figures available. Sooner or later surely one will be called upon to furnish comparisons. As a matter of fact, it is wise to plot such comparisons immediately and maintain a running record of results accomplished.

Mr. Fuller has drawn a very sharp line between repeat, or consecutive, operations and what he terms "sectional" operations. By a "sectional" operation I assume he means a considerable amount of detail assigned to one clerk, the product of which, however, might be definitely measured not as the volume of each detail but the completed result. Until this principle is thoroughly understood, I think we shall fail to grasp the possibility of applying clerical standards.

I feel sure there are many who would term the establishment of such standards as very unscientific, but it has been my experience that if we fail to group details to make a so-called "sectional" operation, the possibility of standardizing much clerical routine will continue to go begging. I have on numerous occasions seen the assignment of many minute operations to clerical workers, all of which are necessary and closely related to the final measurable result. If we try to standardize each of these minute details, the clerical effort involved in recording the results would be so great and intricate that the good to be accomplished by standardizing would be entirely lost. Therefore, let me emphasize the importance of grouping operations and establishing a unit based upon the completed result. In other words, if we are to make progress in standardizing operations, let's not be too scientific.

For many clerical operations, I am decidedly of the opinion that the standard should be set at one hundred per cent for the maximum efficiency to be expected, and that a plan of bonus incentive should be applied which rewards the workers for gradual increases in efficiency as they approach the maximum. It must be borne in mind that clerical operations are more easily affected by slight changes, and changes are so frequent in many clerical operations that there is not the same stability as one finds in manufacturing operations. And, when the maximum is standardized, if there is a sudden change which the Standardization Division has not anticipated and which they have not had an opportunity to restudy and re-standardize, the effects are less likely to be felt in the way of bonus improperly earned. Again, where there are certain assignments of clerical detail which may appear similar, that is, the same class of work involved, it will be found that there are always fluctuations in the actual effort required of one clerk as compared with another, and that during certain periods the assignment of one clerk will be handled more easily than that of another. This would, in most cases, under a maximum efficiency standard be negligible, because under proper incentive it is not long before the greatest number of clerks are up to or above one hundred per cent. This illustrates another phase of the work, where if progress is to be made, it is well not to be too strictly scientific.

Finally, I must take this opportunity to very strongly oppose the practice of extremely accurate detail time studies and the use of an arbitrary allowance

of a certain percentage to offset fatigue and other retarding elements. I am against any such combination of the scientific and unscientific and prefer the establishment of standards for clerical operations based upon studies of fatigue and attendant conditions as a part of productive effort. For example, if a maximum standard is set at sixty units per hour based upon a time study including all the retarding elements that might enter into an operation, that is the standard I would prefer to have maintained; and if at times by exceptional ability or spurts of speed the clerk is able to make sixty-five or even seventy-five units per hour, I would prefer that they understand this excess production is not desired, and only a sufficient production above sixty maintained to insure one hundred per cent maximum. This acts as a factor of safety to take care of any deductions that might be made to cover penalties for errors. In connection with this last statement, there might be a great deal of adverse criticism. However, I feel confident that with due consideration given such plan, or some modification of it, real progress can be made in the line of standardizing operations or applying simplified scientific principles, if you please, that otherwise could not be made, and it is my personal feeling that progress along this line is of paramount importance.

In my opinion Mr. Fuller's paper should be taken as a rule and guide to aid us in bringing about efficiency where we have been more or less neglectful. I consider it an honor to be permitted to discuss this valuable work.

MR. J. WILLIAM SCHULTZ:¹ Obviously the two big factors in most business concerns must necessarily be:

1. The manufacture and cost of the product.
2. The marketing efforts and their results.

In the light of either of these, when you think of clerical activities and their costs, the latter sink into an insignificant place, and yet the following propositions are matters of fact, namely:

1. An efficiently operated office has a distinct bearing upon production on the one hand, and sales efforts on the other, because an office is a service rendering institution. Since all the activities in the business are dependent more or less upon the service rendered by the office, it follows that poor service impairs the efforts of plant and sales force, and vice versa.

¹Comptroller, Robert H. Ingersoll Company, New York City.

2. A dollar saved or earned in the office is of the same value as a dollar saved or earned elsewhere in the business.

3. It is not good judgment to run one or two departments of the business efficiently and waste part of the results of this saving in the office.

I have been much impressed recently by Major George D. Babcock's book, *The Taylor System in Franklin Management*, particularly the emphasis he places upon the long time that is needed not only in investigating and proving to the management that the Taylor system, for instance, is worth all that is claimed for it, but also the time it takes for installation.

We have only begun to give thought to the application of scientific methods to office management, and I take it that it will, therefore, be considerable time before this Society or any other can meet for a discussion of results except in isolated instances, such as the discussed in Mr. Fuller's paper.

Our purpose at this moment, as I see it, is mainly to convince ourselves again that the application of science to the office is a feasible and worth-while thing, thus giving us renewed energy in the continuance of putting it to practice.

We are told that a definite tangible saving of \$100,000 in one concern has been made through the introduction of scientific methods in office management. We can hardly longer doubt its efficacy, realizing at the same time, that this is really only a beginning and that it does not measure the intangible results obtained by the other departments of the business through the rendering of improved office service.

But the Curtis Company is a large business in the office of which several thousand people are employed, handling a tremendous mass of detail. It may be claimed that here we have a set of circumstances analogous to the conditions existing in a plant wherein the same operations are performed over and over again, rendering a high degree of specialization upon the part of the individual office worker not only feasible but necessary.

It is natural that the management of a business in which the office is not such a large factor, raises a serious question as to whether the same kind of intensive analytical work would pay in the smaller office. One clerk will handle several operations in their office, which in a concern like the Curtis Publishing Company are handled by as many different clerks.

The answer broadly, of course, is that scientific method, no matter where applied, pays.

Science is classified knowledge. To classify one must first analyze. When functions, plans, methods, operations, personnel, equipment, space arrangement and the time factor are really analyzed, it becomes a matter of ingenuity, of experience and of research, as to what use will be made of the facts discovered. The distinction between the very large concern and the smaller concern—the very large office and the smaller office—is made at this point. The management in the large office will proceed to rearrange his organization, perhaps separate the staff from the line functions, introduce scientific standards, introduce adequate reward systems, better methods, finer routing, correct equipment and better space arrangement. In the smaller office these things can be done to a limited extent only. In some not at all.

In our own establishment, we have at the home office in New York some three hundred clerks. The total number of clerks in our various branches is less than one thousand. Three and a half years ago, the total number of clerks in all our branches and offices was about two hundred.

Nevertheless, at that time we began to lay the foundations for the eventual application of Mr. Taylor's principles to our office management. Now, at the end of nearly three years and a half, we have just come to the completion of what in our business was necessarily the first phase, namely, the obvious changes in organization and methods which had to be made before we could begin to think of applying the principles for which the world is indebted to Mr. Taylor.

The process was longer than it might otherwise have been, owing to the tremendous expansion which has taken place in our business in the interim, and which immediately required the building of an organization to meet the extension as well as to overcome the former obviously incorrect practices. It might be interesting to note in this connection that the improvements which have been made in the office during the past three and a half years are responsible in part for this very expansion. First, they have enabled us to put in operation sales or production plans which otherwise could not have been successfully carried into execution; second, they have had a certain influence in other parts of our business which has resulted in better organization and management methods. This is a situation somewhat the reverse of what one ordinarily finds.

Our first study was that of classification of organization. We found responsibilities assigned to two or more people and, therefore, assigned to none. This was the very first thing to be corrected, and, of course, resulted in a series of organization charts, shifts in personnel and grouping of functions into orderly correlation. As a result to-day every individual in our business knows his place, function and relation to the rest of the establishment. Incidentally, we have also taken advantage of the opportunity to standardize terminology in this connection.

We next found antiquated and laborious methods in use, which resulted in a study of each department, one by one, until we have finally established what we consider to be at least advanced schemes of operation to the end that the work flows through our various office departments smoothly. It is in this connection especially that we feel we now are entering upon the second phase of our work, that of time studies and intensive analyses, which in addition to more scientific methods, equipment and the like, will lead to some method of establishing incentives, together probably with better routing.

We next found that there existed a lack of co-ordination between the various units in the business that was costing us real money. This we assumed was largely because the one unit did not understand the real nature and value of the work the other unit was doing. This lead, of course, to office manuals and a general campaign of instruction throughout the entire organization; we preached unity and co-operation through the simple method of introducing ourselves to each other. A part of this propaganda is a house organ called "The Message," which to-day has become a fixture as an important factor in keeping our organization in smooth running order.

We do not have in effect one practice adopted by the Curtis Publishing Company, that of issuing instruction sheets to an individual worker, because, as I have already indicated, we have just gotten around to the point where we shall make time studies and introduce what I have been describing to our people as the refinements. Instructions are departmental and descriptive in character. Our aim has been to give the clerk a wider view of his duties and of how they relate to others. To that end we try to make him as familiar as possible with the work of the department. We will later establish the individual instruction sheet, but it will be in addition to the more general instructions now in use. We consider it desirable to interest our people in the business as a whole. You cannot

reduce office work entirely to mechanical operations. Considerable judgment is called for, and the more information of a general character concerning the house there is tucked away in the brain of a clerk, the better is his judgment likely to be. Our plan of promoting people from the ranks, and this is a rather rapid process in an expanding business, also has a bearing upon this viewpoint.

We next found that the attitude toward our office pay-roll was "keep it down." It was kept down effectively and so were the results we got. One of the obvious things which was necessary was to make a change in this policy. For instance, there was a plan in operation of bringing the pay-roll up to a member of the firm about the first of the year, who went over the individual names and arbitrarily decided to raise this or that salary without particular reference to the work that the employee was doing.

We now have in vogue a scheme of raising office employees' salaries as the records show they are entitled to them by reason of the better work they do. This is in most instances based upon reports of which I shall speak in a moment. Although I know that the method is not yet to be characterized as scientific, it is a great improvement over what had gone before, and is necessary to put the force in a frame of mind where it now feels that it is getting a square deal. Annual bonus, educational courses, club rooms and the like, have also been helpful in this connection.

We next found that we knew nothing at all about what our force was doing. We gradually established a system of reports prepared by each individual worker, which have given us a set of statistics. Our objects in organizing this report system were three: first, we wanted the employees to know that we were in touch with their performance; second, we wanted to get some immediate information as to what that performance was as well as comparisons between individuals; third, and this is the most important object, we wanted to establish a set of statistics with which we shall later make comparisons when our complete plan has become established.

A great deal of work has been done in the way of better routing, but none in scheduling. So far I personally have not been able to convince myself that a planning board or similar device is a feasible undertaking in the management of a typical office like ours. It is my belief that office work which is dependent upon the daily incoming mail, and which in the main should be handled on the same day as the mail comes in, or not later than the next day, can be placed upon

a prearranged schedule, which is practically automatic. I don't believe it is practical to place it under the control of a planning department. Not only do I think it would entail unnecessary expense but it would seem to me to incur a delay which cannot be saved elsewhere. This, however, is conjecture upon my part, and I hope some day to make a test of the situation.

Mr. Leffingwell, as I recall it, used a planning board in an office, but the conditions I should not consider to be applicable to a typical business office such as ours. However, my mind is open on the question. It will receive very thorough study before a final conclusion is reached.

In a plant the unit of production is fairly well established and average cost per unit can be obtained. In the office the unit of production is really a miscellaneous mass of detail. It is always of value to establish a common denominator. In our office this is the order. We judge the result of the office as a whole not in the total cost, but in the cost per order handled. In each department we try to get the cost of running that department per order handled, as well as per letter typed, per 1000 cards filed, etc.

We have recently established a bureau of standards similar to the Standardization Division referred to in Mr. Fuller's paper. It will be the purpose of this bureau to perform almost exactly the same duties which the division in the Curtis Publishing Company performs, and I hope with similar success.

Summarizing, I am thoroughly convinced that practically every phase of scientific management as followed by Mr. Taylor is applicable to the office, with the one exception of the planning department, and I may be in error about that. We have done the rough work in classification and standardization of organization, personnel, machinery and methods, and what is more important than these is that our organization is now working in an atmosphere of acceptance of plans. We can to-day establish the more intensive and more scientific methods knowing that our people will work with us with open minds. Our office force knows that every step which has been taken thus far has resulted in an improvement of their condition as well as their income, and the management knows that our office and administrative expense to-day is a smaller percentage of our sales volume than it was before. With this much of the ground-work laid, we are now in a position to make the progress originally planned. War conditions and consequent further drafts upon our organization, however, may retard us considerably.

In conclusion, I should like to say that the business world is indebted to Mr. Fuller for the pioneer work he has done in this field. It may not be out of place, either, to point to the wonderful possibilities of speeding up war work and the opportunity for saving that exist in the administration of some of our large government offices. I happened to do some dreaming the other day, while engaged in the preparation of some manuscript, on the possibilities of more scientific management as applied to the country as a whole. I think it would be conceded by everyone here that the business profits of the country could easily be increased ten per cent. Last year our profits were estimated at two hundred and fifty billion. That ten per cent would have produced twenty-five billion dollars at that rate, enough to finance our participation in the war, without increasing our national debt one dollar. The office can furnish a part of this saving.

MR. GROVER F. FOX:¹ We are just across the square from the Curtis Publishing Company, but we do not consider ourselves in their shadow. We go over there sometimes to get ideas, and this last week one of their men came over to learn something from us. I would like to add a few words to Mr. Fuller's remarks.

I do not think there is any question but that even in a smaller office—and our office is small, compared to the Curtis Publishing Company's office—the same principles of management can be applied.

And we have found that a great deal of the mechanism described by Mr. Taylor is also applicable. We have a Planning Department with regular bulletin boards to control the work. In this Planning Department are clerks performing the various functions such as route clerk, order-of-work clerk, stores-balance clerk, time clerk, etc. These clerks perform their respective functions for all the departments. We also have a time-study man to study the various departments. That may not apply to every office. As Mr. Schultz says, it would not apply to his business, perhaps. But I want to make the point that it does apply to ours.

We have different departments in our office, one where we have thirty clerks performing perhaps fifty operations, and in one department thirty to forty clerks all doing similar lines of clerical work. We have time-studied these operations very closely, and use either the bonus plan or the premium plan of pay-

ment. The tasks are definitely set, with times made up from tables as the result of this time-study. We have found in our experience that the application of scientific principles and methods has resulted in a considerable saving in labor and consequent reduction in costs, and has been particularly effective in this past year in keeping down our labor turnover. That may sound queer for war times, but the employment manager told me the other day that our labor this year was no worse than last year. And I know that the help required for performing the same work was considerably less, which I think is a very good end to accomplish during war time when labor is so scarce. An article in a recent number of the *New Republic* states that in this is one of the big hopes of the country during the war period—doing the same amount of work with less help—and this can be accomplished only by the application of more truly scientific methods.

MR. F. M. HOLMES:¹ Our organization is in a similar situation as regards the working out of the details of the application of scientific management, as that of the previous speaker.

We are very much interested in the matter, and about a year ago started a department with eight men, for the purpose of studying, analyzing and standardizing methods best adapted for our institution. The work of this department has been somewhat interrupted since its organization, by the loss of men to the service of the country, so that we have not made very much headway in actual standardization.

We have in excess of 30,000 active accounts on our books, the bookkeeping of which has always been done on Boston ledgers by men accountants. It became evident to our organization that the conditions existing at the present time make it necessary to seriously consider the reorganization of the Bookkeeping Department by installing bookkeeping machines with women operators.

This change has now been practically completed, and our accounting both in the Banking Department and Trust Department is being done with speed, accuracy and neatness entirely on bookkeeping machines by women operators. The installation, when completed, will consist of forty-five bookkeeping machines, which we understand is the largest bank installation in the country, and we will be very glad to have any of

¹Production Manager, Wilmer Atkinson Company, *The Farm Journal*, Philadelphia, Pa.

¹Manager, Trust Department, Old Colony Trust Company, Boston, Mass.

the members of the Taylor Society, who are interested in bookkeeping by machine, call at our office at any time and see it in operation.

To my mind there is no question about the application of the principles of scientific management to office work.

The indebtedness of the world to Dr. Taylor for the great work which he has given us, and which I believe it is the duty of every office manager to apply as far as possible in his institution, will never cease to exist but will increase as time goes on and its value is more fully realized.

MR. MORRIS L. COOKE:¹ I think it was twenty years ago that I first went to visit the Curtis Publishing Company, and I can remember that one of the problems in office management which was bothering them then was a high square box with a lid. It looked like a box which in the old days was used to keep flour in in a grocery store. That box was filled with the type letters M. I have forgotten the size of the letter A box and the size of the S box, but I remember Mr. P. S. Collins, the General Manager of the Company at the present time, was then beginning to be interested in system, and that box of letter Ms was one of the things that began to get him interested; because these Ms were used, with other letters, instead of labels for the subscriptions. Mr. Curtis insisted on having a neat address on the Ladies Home Journal, and would not permit a label of any kind. As the circulation was rising from 100,000 to 200,000, then 300,000, and so on, this box of Ms was getting bigger and bigger. Mr. Collins appreciated that something would have to be done, and I think that is one of the things that got him started. At any rate, a few years ago, he told me that they had had the benefit of the advice of three different groups of what I think he called efficiency engineers, people who had come in there and made their contributions. He said the company had always gotten their money's worth, that every man that had come had made such a distinct contribution to the work of the firm that they had felt it was a valuable investment. It seems to me that we owe this concern a very great debt of gratitude for having gone into a brand new department of industry and commercial life and having made a conspicuous success of it. Of course we have all known about Mr. Fuller's work in recent years, and the work that he has so splendidly described tonight stands out as among the best of the kind in the country.

There is just one point I want to suggest, more to get

us all thinking than because I have any very definite suggestion to make. In the beginning of *Shop Management*, I think Mr. Taylor suggested that the two important elements in management were wages and productive cost. Now it seems to me that we should encourage those who deliver papers before our Society, and especially those who bring up detailed operations of this kind, and who are good enough to give us their experience in the reduction of operating costs and production costs, that we should encourage them at the same time to give us their labor costs, to give us their wages. I think I am right that in *Shop Management*, which Mr. Taylor wrote twenty years ago, there were tables where he gives the cost of turning locomotive wheels at Midvale, and at the same time gives us the daily wage. I had planned to ask Mr. Fuller something about the wage scale at the Curtis Publishing Company, but when I realized that they do not consider it desirable to give information of that kind I abandoned any such thought, and will not press it. But at this time, when so many of our fellow countrymen are going on the Government pay-roll, and their wages are common knowledge, and when boards are being appointed to go into the business affairs of industries and railroads, and where plants working on war orders have their pay-rolls subject to the visé of Government inspectors, it seems to me that the men of this Society should take the position that the pay-roll of any establishment claiming to have scientific management must some way become more or less public property.

I recall that a few years back some of our companies began to introduce annual pay-rolls. Mr. Feiss and Mr. Joseph and Mr. Kendall now keep annual pay-rolls. The Plimpton Press will tell you how many employees they have at certain rates of pay. This interest in pay-rolls is a natural one. I think we all ought to stand for increasing publicity in regard to management, especially in establishments where scientific management is supposed to be introduced, because I am sure that it does certain establishments a great deal of harm to have other establishments tagged as scientific, and to have the public have the idea that low wages obtain in those establishments. We stand for high wages and we cannot stand for anything else if we are going to stand for increased production.

MR. H. W. SHELTON:¹ I should like to add one more fact about the *Farm Journal* of which Mr. Fox

¹Consulting Engineer, Philadelphia, Pa.

¹Assistant Professor of Organization and Management, Amos Tuck School, Dartmouth College, Hanover, N. H.

has informed me. It is rather significantly in line with what Mr. Cooke has just said.

In one department there which has recently been put on task and bonus, the workers previously were paid \$7 to \$8 a week flat time. Since the task work has been established the same girls have been making an average of somewhere between \$12 and \$14 per week. This has resulted in their remaining with the company in spite of attractive offers from other concerns. If those girls had been on their original flat time basis they certainly would not have stayed in the face of war offers. As a result of bonus they have been well content and prefer to remain with the company which has developed them within a year or eighteen months to this point, than to go for one dollar or two dollars more a week with some other company in which they could not be sure what the future might hold for them.

MR. R. A. FEISS:¹ I am glad that somewhere in the discussion the truth has been brought out that the measure of profit is not only the profit that goes to the directors, but the profit that goes to the much greater, more interested body of people that make up the organization, the people that work. I do not believe there is any true test of scientific management on the basis of profit unless it shows first a profit to the workers.

MR. FULLER: Mr. Leffingwell did not gather what I meant by a "sectional" plan. I have been describing a principle and agree with Mr. Leffingwell that the straight consecutive plan is not applicable to methods in a small organization. The principle is, however, and that is what counts.

Mr. Leffingwell spoke of personal training. We have two different plans. First we started an actual training school, some five years ago, in which we put all new clerks. We gave them about three days training in general company policies. We sent them over our building and tried to interest them in the general business. This training school never was a success and was eventually eliminated. We are now accomplishing some results, and it is one of the things that we are working on and expect a great deal from during the summer, in training along a different line. We are now studying intensively the individual records of every employee. For every person who does not come up to the standard, we find out what is the matter with each individual. They may be the "Don't Care" type. If so we must interest them in the job

or get rid of them. Or they may simply lack knowledge: this class forms a large percentage, and in those cases we must teach them.

Mr. Schultz brings out the value of using money as the barometer of effectiveness. In our plant, as well in office work as in factory work, dollars and cents are the acid test to which we put all our plans. If new work is not going to result in a betterment to the Company we do not put it into effect. Mr. Schultz and Mr. Leffingwell speak of the Curtis organization as a big company. This is true, but it should be remembered that we are merely a big collection of small offices. We have centralized office forces but we break most activities up into small groups; therefore much standardizing effort is spent in groups of only a few individuals. I have one group in mind now where there are only about ten people. We have to do the work here on a sectional basis just as Mr. Leffingwell described; we cannot possibly use a consecutive plan; we do however use the consecutive principle.

We use planning boards in several departments but have no central planning room. We tried some experiments along that line, but think we get better results with divisional planning boards. We cannot agree with Mr. Schultz that planning boards are not necessary. We think them invaluable.

If there was any failure on my part to mention Mr. Taylor's name and give him full credit, then it was unintentional. Whatever we have learned we have learned in large part from Mr. Taylor. It is true, as Mr. Cooke said, that we have had three or four systematizers in our plant—the last about seven years ago—and that none of those men were Taylor trained, but the standardization work we are doing today is almost entirely based on Mr. Taylor's books, and the study of the books of the men who worked with him. As a matter of fact, but little of the present standardizing was undertaken until after the last of the system men had left us. These men assisted in the solution of certain accounting and mechanical problems but they did not father our standardization activities. The work is going along in Taylor lines; it is far from complete but we are working steadily.

In connection with the statement of the gentleman from the *Farm Journal* in reference to turnover, I congratulate them from the bottom of my heart. Mr. Holmes speaks of the loss of men who are called into war activity, and I want to point out that of the seven men who were doing standardizing work with us last spring, six today are wearing the uniform. We have filled their places with women. One was trained from

¹General Manager, Joseph and Feiss, The Clothcraft Shops, Cleveland, Ohio.

a clerkship in our plant, one of them is a college woman who has specialized in psychology, another woman came to us after a domestic science course, and another specialized in social science. They are carrying the work on, the same work that these men did when they put on the uniform, and the women are doing it excellently, too.

The results which are shown on this chart (indicating), with the red line, are the definite efforts of one of those people, a woman who is here tonight. She came with us years ago as a clerk and now holds an important position as an office analyst. Another plan, put into execution about three or four weeks ago, will save us between five and six thousand dollars this next year. This is the result of the work of another of our young ladies. She joined our force less than a year ago.

The increase in earnings through standardization has been large; in connection with the bookkeeping example which was shown, we have had an increase of about twenty-five per cent. Our minimum wage today, based on recent investigation, is high for the city of Philadelphia. The larger salaries, when bonus is considered, grade proportionally higher.

Our general principle is to know what production ought to be and what production really is; then we attempt to raise "what is" to "what ought to be." We believe in good earnings to the real earners and we try to know who the real ones are and to reward them.

MR. COOKE: Would it not be possible when you revise your paper to put wages in?

MR. FULLER: Wage scales differ so radically between cities that I should prefer not to. Our wages are high and the whole principle of our Company is to pay good wages and make the people work hard. We carry an annual pay-roll. What I mean is that we have a record of the earnings of each individual for each year. All companies will have to keep such a record in future in order to make out their income tax reports.

MR. BARTH: There is just one more word that I would like to say, and that is that I do not believe we realize the cost to us of errors. I know of a case of an employee of the Pullman Company spoiling some high speed drills that cost hundreds of dollars.

MR. FULLER: I have seen a \$35.00 per week man spoil \$400.00 worth of paper in one week.

THE Taylor Society desires to make acknowledgment of the courtesy of the American Society of Mechanical Engineers for permission to occupy space temporarily in their already overcrowded rooms. The Taylor Society had made application for offices in the Engineering Societies Building, in order that it might by physical association ally itself with those societies whose purposes are professional and not commercial. Space not being immediately available, the A. S. M. E., through its Secretary, Mr. Rice, received the Taylor Society temporarily as a guest. This is not the first time the A. S. M. E. has shown such a courtesy—and some of those societies which it has assisted have become strong and influential. May that be an omen!

MEMBERS and friends of the Taylor Society who are authors of books and papers on subjects pertaining to management are urged to send autograph copies for the library of the Society. The establishment of such a library is desirable for several reasons: first, for the sentiment attached to a collection in one place of the literary output of members and friends of the Society; second, for reference in editorial work connected with the preparation of the BULLETIN; third, and not least, to enable the Managing Director to make specific references in the large correspondence which is developing concerning problems of scientific management and what has been written about those problems. A list of books and pamphlets already received will be found on p. 40.

GO ahead on the new price level, is the advice of Professor Irving Fisher. "Business men should face the facts. To talk reverently of 1913-14 prices is to speak a dead language today. The buyers of the country, since the armistice, have made an unexampled attack upon prices through their waiting attitude, and yet price recessions have been insignificant. The reason is that we are on a new high-price level, which will be found a stubborn reality. Business men are going to find out that the clever man is not the man who waits, but the one who finds out the new price facts and acts accordingly."

TAYLOR METHODS IN FRENCH WAR INDUSTRIES

MINISTRY OF WAR

Office of Under-
Secretary of State
for Administra-
tion

Administrative
Section

12962

Nos.

1388 ad.

Subject:
The Bonus
System

Introduction of
Industrial
Methods

Paris, February 26, 1918

THE PRESIDENT OF THE COUNCIL, MINISTER OF WAR.

To The Under-Secretaries of State for
Aeronautics, for Health and for Military Justice;

The Military Governors General of
Paris and Lyons;

The Generals commanding Districts;

The General commanding the French
troops of North Africa.

Since the beginning of hostilities, we have again and again been preoccupied with increasing the yield of work in military plants and in rewarding the activity and competency of the workmen.

The prolongation of the war has made the Military Bureaus adopt various methods of work and bonuses tending to obtain this result.

Under present circumstances, it is more important than ever to realize, by means of a continuous improvement in the methods of work and by means of a system of bonuses, an economy of labor and especially of mobilized personnel.

Thanks to the application of principles already established and the judicious use of bonuses for work, the progress that has been realized shows that an important milestone has been passed along the road towards the rational organization of work. Harmonious results obtained by analagous methods in the different branches of service permit us now to enter with assurance upon the path of generalizations.

An attentive consideration of data furnished by the experience of the last months permits us to deduce modifications that should be made in the methods in use at present, to the end of improving the organization of work. This is the subject of the present circular.

I.

EXTENSION TO ALL DEPARTMENTS OF THE GENERAL PRINCIPLES OF INSTRUCTION No. 10478 1/5 OF AUGUST 17, 1917 AND OF CIRCULAR No. 10624 1/5 OF AUGUST 22, 1917.

Various Circulars issued by the Bureaus of the Central Administration have established the principles of this industrialization of work.

The provisions of Circular No. 10654 1/5 of August 22, 1917 have been applicable, up to the present time, only to the Commissary Department.

The general directions outlined by this Circular (B. O. E. M. of September 3, 1917, page 2372) as well as those of Circular No. 10478 1/5 of August 17, 1917 (B. O. E. M. of September 10, 1917, page 2415), will be, in the future, applicable to all departments and will constitute an initial basis for the organization of work in such departments.

In each department it will be well to apply the appropriate methods of procedure. Special instructions to each Under-Secretary of State or Bureau of the Central Administration should regulate the conditions of application.

II.

NECESSITY OF NATIONAL ORGANIZATION OF WORK

The heads of plants, officers and agents accustomed to administrative regulations too often have a tendency to consider military labor as gratuitous.

The desire to economize the raw material and utilize the by-products of manufacture which occupies, and justly, as set forth in the Circular of August 22, 1917, an important place among the conditions of success for every industry, ought to have as its indispensable complement, especially under present circumstances, the desire for economy of labor.

It appears, therefore, as an imperative necessity that all the heads of military establishments should turn to the study and application of methods of work suitable to the exigencies of the moment: *the employment in every kind of work, of the minimum of labor through scientific research into the most advantageous methods of procedure in each particular case.*

III.

PLANNING DEPARTMENTS

A. CREATION OF PLANNING DEPARTMENTS

Work which is apparently the most simple is, in reality, very difficult to organize; its execution under the best conditions depends upon a great number of factors the search for which lies far beyond the power of the workmen.

Among these factors exist numerical relations which have to be determined. For each kind of work, therefore, there is a scientific theory which, in many cases, has to be created and developed and which ought to be substituted for the empirical methods of the past.

It is, therefore, indispensable that the study of the multiplicity of questions raised by the scientific organization of work should be intrusted, as far as possible, to special planning departments the province of which shall be the examination—at the order of the manager of the plant or on their own initiative and always in collaboration with the executive bureau—of all questions relative to improvements to be made in conditions of work, tools and the use of tools.

The absence of study and preparation, in the case of any work, means material and pecuniary losses, a fact of which it is important that the workmen should be convinced. They should, therefore, at present, frankly

abandon the empirical methods recognized as of little efficacy and accept confidently the advice and direction of a competent agency acting under the authority of the head of the plant.

Planning departments shall be established, from this time, in every plant or, at least, in each type of plant, beginning with those that shall be judged best prepared for the adoption of new methods.

Besides these, one or more central planning organizations can operate in the office of each Under-Secretary of State or Bureau, the purpose of these central bureaus being to collect information on all the methods of work thus permitting them to compare and classify them and to make general the employment of the most advantageous methods.

At first, the personnel of the Planning Departments—which will be small in number, and for which competence must be a first requisite and rank excluded as an obligation—will have to be recruited either in the plant itself or from among the group of plants in the same service.

A permanent liaison should be established, on the one hand between the Central Bureaus and the Planning Departments of plants of the same service, and on the other hand between the Central Planning Bureaus of the various offices of Under-Secretaries or Bureaus in such a way that a profitable coördination with the general organization shall exist among all the elements of the various services. (1).

B. ROLE OF TECHNICAL INSPECTIONS AND GENERAL INSPECTION OF PERSONNEL

Each Under-Secretary's Office or Department of the A. C. (Central Administration) together with the Technical Inspections Body will have:

1. To assure itself whether the personnel of the plants is made up in conformity with the directions of Chapter IV, following, and, to this end, to propose all necessary changes;

(1). The heads of plants and their Planning Departments should consult the following works:

1. "Principles of Scientific Management" (F. W. Taylor);
2. "Scientific Organization," extract from the Revue de Metallurgie (Vol. 12, April 1915). Dunod and Piat Publishers;
3. "Taylorism", by Victor Cambon, Nancéenne Press, Nancy;
4. "The Taylor System", (Extract from the Bulletin des Amis de l'Ecole Polytechnique, Henri Le Chatelier (Dunod and Piat).
4. To control, by means of statistics kept in the plants, the increase obtained in the efficiency of labor.

2. To discover whether the Planning Departments have an exact conception of their role;
3. To look out for the maintenance of stability in the personnel intrusted with management, supervision and execution.

Finally, the Body for the General Inspection of the Personnel of the Territory, in the course of its operations in the various plants, will have to control:

1. The application of the general principles of the scientific organization of the work;
2. The importance of the results obtained especially in what concerns the reduction in personnel determined by the use of the methods of organization in question.

C. GENERAL PRINCIPLES FOR THE GUIDANCE OF THE PLANNING DEPARTMENTS

It is indispensable that the Planning Departments determine the exact conditions of labor of different kinds and collect all the data necessary to solving the problems in every case before issuing special rules to such or such department (especially rules regarding the awarding of bonuses.)

The first concern of the Planning Departments should be to realize the maximum economy in labor. The Circular of August 22 points out two principal means to this end:

The first consists in the use of machines; the second in increasing the efficiency of the laborers by means of bonuses.

Regarding the first means, the circular mentioned above is sufficiently precise. As to the second means, it would be well, at the present time, to complete the directions.

The management of a plant should *tend* towards the application of the following principles:

1. To undertake a scientific study of each kind of work;
2. To specialize and train the workmen in each element of work;
3. To keep a record of the work of each workman as regards quality and quantity;
4. To prepare the daily task of each workman.

The work of the Planning Departments shall be directed according to these principles. Their activities thus determined will have the double result:

1. Of relieving of a considerable task the heads of plants already sufficiently absorbed in their work of management;
2. Of relieving the workmen of the planning of work which is beyond their ability and permitting them to devote all their time to its execution.

The Planning Departments thus take over a part of the work which now falls to the management of the plants and to the workmen. Wherefore, necessarily, a certain economy in the personnel of the management and the workshops.

The management should, moreover,

1. Choose, as far as possible, for each kind of work the most appropriate tools and the most skillful workmen;
2. Work towards a progressive suppression of gang work whenever possible. In fact, experience shows that in gang work the most industrious and skillful workman gradually takes the pace of the worst;
3. Plan the best distribution of material means, the most advantageous arrangement of the shops, their interior installation and the most economic succession of the work;
4. Keep a record of the statistics on production;
5. Plan, on a permanent basis, all the improvements to be made and to make at the right time all necessary suggestions.

IV.

PERSONNEL OF MILITARY PLANTS A. MANAGEMENT OF PLANTS

It is important, first of all, that the managers of plants be the first to realize the necessity of adopting those industrial methods which alone are able to solve the problems raised by the shortage of labor. It is under their authority that the Planning Departments will have to seek the most advantageous methods of work.

B. COOPERATION OF MANAGEMENT AND WORKMEN

Through the Planning Departments, acting as intermediaries, the management assumes its share of the work, first by studying conditions of operation and by preparing the daily task of the workman; next by preparing for their role of instructors the officers who should no longer be considered as charged solely with the duty of discouraging idleness but of teaching the workmen the best methods, guiding and encouraging them.

It is often worth while to listen to the workman who suggests an improvement and to recompense him if the procedure or implement proposed constitutes a real advance and may be adopted officially after having been examined and tried.

C. VARIOUS BONUSES AND REWARDS

By analogy with the provisions of Article 18 of the decree of February 26, 1897, prizes may be awarded to the entire personnel of military plants (military, civil, feminine personnel, colonial workmen, foreign laborers.)

These prizes, which should not be confused with the bonuses for work enumerated in Chapter 5 following, should be considered as rewards granted for exceptional reasons and to recompense progress due to the initiative of the workmen and foremen.

The heads of plants will find in their application a powerful means of encouraging initiative. But we must not lose sight of the fact that, in order to be efficacious, these rewards should be in proportion to the economy realized. This should be calculated or at least estimated, and a statement attached to the recommendation for reward.

The recommendations for reward shall be addressed to the Secretary who will decide, in each case, the amount of the reward to be granted.

Moreover, the heads of plants and their associates who will have particularly distinguished themselves, either through results obtained in the industrialization of the plants or through work having the same object, may be recommended for rewards provided for in Article 277 of the present Administration. (B. O. E. M. Vol. 74.)

Competent divisions of technical inspection shall be charged with deciding upon these recommendations.

Account will be taken, of course, of services of this kind in passing upon recommendations affecting the career of the officers.

D. OFFICER GROUPS. THEIR FORMATION

In order that the scientific organization of the plants may produce the results that we have a right to expect, the officers should be familiar within the limits of their authority with the new methods and conditions of work, and should be competent to teach the workmen in coöperation with the Planning Departments as the new organization of the work develops.

The heads of departments will have to look for the most apt elements in the personnel under their direction and give them, as soon as possible, under determined conditions, the necessary instruction.

Each department of the Central Administration shall arrange the details to be adopted to assure the moulding of officer groups in the plants.

E. STABILITY OF PERSONNEL

The advantages of stability in the management and officer groups need no longer be demonstrated. Without this condition, no lasting, speedy or complete result can be realized.

As to the stability of the personnel of the workmen, this is one of the essential conditions of specialization.

A workman, even a very apt one, does not execute his task with a satisfactory result except after an apprenticeship of a certain duration.

This suffices to show how frequent changes in personnel means serious losses.

The reduction in efficiency of military plants due to labor turnover is so grave that we should not hesitate to take, without delay, the most efficacious measures to remedy it.

The attention of the generals commanding districts is called to the following points:

1. To assign to plants where the need of industrialization is felt to be most imperative the personnel which presents the greatest guarantees of stability such as:

Men of the Auxiliary Service of the Territorial class.

Men belonging to the Army but not eligible for Army service.

2. To assign men only to employments in accord with their trades and place them at once, as far as possible, near their homes, in accordance with directions of the circular of February 14, 1916, No. 934 D.

3. An important cause of instability results from the granting of delays in being called to the colors or from placing the military personnel of the Departments and works of the Ministry of War at the dis-

posal of the Ministry of Munitions.

It seems worth while to recapitulate here the regulations in force to safeguard the operations of these Departments and works.

I. *Personnel Released for the Advantage of Munitions Plants.*

Ministerial Instruction No. 2492 1/11 of February 10, 1917 (1) determines in paragraph 1 the three categories A, B, and C, (page 2), in which specialized workers can be listed as regards the possibility of placing them at the disposal of the Ministry of Munitions as well as the conditions under which the district commanders must defer to the orders of this minister.

1. Professional workers who discharge in the Army work pertaining to their specialties. (Category B).

The commanders of districts should not lose sight of the obligation resulting from the terms of this circular of insuring the replacement of specialists of category B and keeping them at their posts until their substitutes are broken in. This breaking in should, in general, be accomplished in a few days. In exceptional well defined cases, when it may require a longer period of time, the man released (for this service) may be retained for the maximum period of a month.

In no case can this maximum be extended.

2. Specialists the retention of whom is absolutely necessary to the operation of the service in which they are employed. (Category C).

These specialists, whether they are retained by virtue of articles 3 and 4 of the law of August 10, 1917, or whether they are regarded according to the replacement plan as personally indispensable should not, as a general rule, be withdrawn into the service of the Ministry of Munitions.

II. *Deferred Classifications for the Benefit of the Economic Life of the Country.*

Guarantees of stability in the personnel of the Military Plants are contained in the following documents:

- (a). Circular No. 4422 4/12 of February 4, 1916.
- (b). Circular No. 14960 2/4 of March 8, 1916.

(1) Supplemented by the Information Leaflet of August 20, 1917, No. 16627 1/11 and the appendix of October 15, 1917, No. 23757 1/11 and the circular of January 18, 1918, No. 1565 1/11.

- (c). Circular No. 2252 7/5 of February 9, 1915.
- (d). Circular No. 9872 7/5 of July 14, 1917.
- (e). Decision No. 79280 S/H of November 26, 1917.

According to the terms of the above circulars, no soldier belonging to the Engineer Forces or to the Aeronautic Units can be put in the deferred class or withdrawn for factory work without a special authorization given either by the Under-Secretary of State for Aeronautics or by the Minister under the authorization of the 4th Bureau.

As to the Commissary Department, it is to be recalled that, except in the case of release, a request for assignment or deferred classification from a baker of a Station-Store should not be granted except after the decision of the Under-Secretary of State.

Moreover the personnel assigned to the canteen cannot be subject to change without as a necessary preliminary provision for its replacement.

In all cases, substitutes should be secured before the release and in time to effect the "breaking in" within a fortnight at most.

These conditions of release and substitution should be applied rigorously to all specialists and when necessary to all specialized workmen.

V.

BONUSES

A. *BONUSES FOR PRODUCTION*

- (a). *Conditions to be Satisfied by a System of Bonuses for Production.*

In order that bonuses for work fulfill effectually the purpose for which they are designed, they should satisfy certain conditions:

1. To have as justification economy effected by a reduction of cost price through increase of production without increase of plant or through reduction of personnel in cases where there is no need to increase production;
2. To divide this economy between the workman and the State, in general, equally, this proportion being possible of change to the advantage of the workman by ministerial authorization;
3. To be possible of award to different categories of workmen (skilled or not) working in the same place;
4. To be in keeping not only with the occupational status of the workman (for which we can take as guide the wage that he receives in private life) but

also with his value in his work, i. e. with his efficiency. This condition, which can be satisfied immediately in certain departments, can be satisfied in others only in accord with the progress realized in the organization of the work;

5. To be determined and made known to the workman on the completion of his work or at the end of each day;

In order that the bonus may produce complete results it is indispensable that the workman should see clearly from day to day what he has earned;

6. To be determined in such a way as to remove from the mind of the workman any suspicion of partiality.

(b) *Bonuses for Efficiency (fixed and variable.)*

Certain departments have divided the bonus for work into two parts—a fixed part, awarded indiscriminately to all workmen, and a variable part.

Experience proves that the fixed bonus has no effect on efficiency; it is to be suppressed.

However, departments that have adopted the principle of first deducting a part of the fixed bonus for the advantage of the mess may maintain the fixed bonus, limiting it to the amounts now turned over to the mess, in such a way that the largest possible part of the assignments *may be employed as a variable bonus intended to increase efficiency.*

B. OTHER BONUSES

(c). *Bonuses for Economy.*

A bonus for economy, the amount of which is to be fixed in each Bureau can be instituted under the conditions in force in the Commissary and Engineer Services—Circular No. 10478 1/5 of August 17, 1917 and 10654 1/5 of August 22, 1917.

(d). *Bonuses for Specialized Work.*

The bonus for specialized work which is in force in the Commissary, Engineering and Health Services will have to be abolished completely and by degrees whenever it can be replaced by the bonus for efficiency.

It will be an important part of the duty of the Planning Departments to determine the conditions under which workers in specialized occupations can be remunerated through the bonus for efficiency.

But any abuse of the award of the bonus for specialized work should be avoided always. Certain plants have a tendency to consider as skilled workmen persons who are not real specialists, but whose only claim is their small number.

Moreover, the list of occupations which may enjoy the benefits of it should be placed in every Under-Secretary's Office or every Directorate taking strict account of the above observations.

(e). *Bonuses for Supervision.*

A bonus for supervision can be awarded to foremen and heads of work-shops according to the rules given in Circulars No. 10478 1/5 of August 17, 1917 and 288 1/5 of January 6, 1918 (B. O. No. 3 of January 21, 1918) and which are now in force in the Commissary and Engineering Services.

The purpose of this bonus is to interest superintendents, heads of work-shops, foremen, etc., in the efficiency of the personnel under their orders.

The bonus for supervision, therefore, should be dependent upon the efficiency of the work-shop.

(f). *Bonuses for Heavy Work.*

The bonus for fatiguing occupations now in force in the various branches of service is not in relation to the efficiency of the work. It may continue, nevertheless, to be awarded under the same conditions; but it constitutes rather an indemnity either temporary—when the special circumstances of the nature of the work render its execution particularly hard, or permanent—in very limited cases when the work is itself of an essentially fatiguing character.

The rules governing awards fixed by Circular of August 17, and by Circular No. 288 1/5 of January 6, 1918, B. O. E. M., p. 52, should be observed to the letter and without modification.

(g). *Amounts of the Bonuses.*

The amounts now in force, according to the rules of cumulation given in Circular of August 17, 1917, remain the same. These amounts may be raised by ministerial decision when the scientific organization of the work shall have progressed sufficiently.

This rise will have to fulfill absolutely the condition of a reward for economy resulting from increased efficiency.

(h). *Piece Work.*

Piece work shall be continued in works where it is practiced whenever it can not be advantageously replaced by the method advised in the present circular.

(i). *Extension of Bonuses to Increase Efficiency to Personnel other than Military.*

The bonuses influencing efficiency have been applicable, up to the present time, only to the military personnel.

There will be applicable, in the future, to all categories of personnel working in the same work-place (military, civil, feminine personnel, colonial workmen, foreign laborers) the bonus for efficiency, the bonus for economy, and the bonus for supervision.

As to the bonus for heavy work it can be extended to personnels other than military only in exceptional cases, and for grounds exclusively temporary, when the conditions of the work render its execution particularly fatiguing.

The award in a permanent way of bonus for heavy work can not be granted except in the case where a special wage has not been provided for the execution of such work.

The provisions of the present circular have no other

purpose than to cover the first stage on the path of industrialization.

Processes of work are essentially open to improvement; and the institution of Planning Departments has precisely for its object their evolution through utilizing data furnished by a systematic observation of work conditions, and through profiting by the progress realized in private industry as well as in military plants of all services.

The present circular recapitulates the directing orders which the present state of industrialization demands. It should not be taken as the last word in the organization of work but as a beginning towards more and more efficacious and scientific methods.

(Signed:) GEORGES CLEMENCEAU.

WHAT LENINE SAID ABOUT THE "TAYLOR SOCIETY"

ABSTRACT IN THE FORM OF QUOTATIONS FROM THE PRINCIPAL PARTS OF AN ARTICLE BY NIKOLAI LENINE, ENTITLED "THE URGENT PROBLEMS OF THE SOVIET RULE," TRANSLATED FROM *Pravda* OF APRIL 28, 1918.

PEACE temporarily having been obtained, the duty of the Soviet Republic is to concentrate for a time on the most important and difficult problem of the revolution—the problem of organization. The respite which has been granted must be utilized to cure the wounds which have been received by the whole social and economic organization of Russia. In that way only shall we be able to offer further resistance to bourgeois opposition, and particularly to aid social revolution in the West, delayed for a number of reasons.

The negative work—the destruction of feudalism and monarchy—was performed by the bourgeois revolution of Kerensky. The organization it effected was but a continuation of bourgeois minority control. On the other hand the Socialist revolution of October 25, 1917, is confronted by the problem "of establishing an extremely complex and delicate net of newly organized relationships covering the systematic production and distribution of products which are necessary for the existence of tens of millions of people. . . . The victory of the Socialist revolution will not be assured unless the proletariat and the poorest peasantry will manifest sufficient consciousness, idealism, self-sacrifice and persistence. . . . The main difficulty

is the economic domain—to raise the productivity of labor, to establish strict and universal accounting and control of production and distribution, and *actually to socialize production.*"

"We are now confronted by the problem which is the most urgent and which characterizes the present period; to organize the *management* of Russia. We, the Bolshevik party, have *convinced* Russia. We have *won* Russia from the rich for the poor, from the exploiters for the toilers. It is now up to us to *manage* Russia. . . . For the first time in the history of the world the Socialist party has succeeded in completing, essentially, the task of winning power and suppressing the exploiters, and in coming *close* to the problem of management. We must prove worthy of this. . . . We must not fail to see that besides the ability to convince and win in civil war, successful management depends on the ability for *practical organization.*"

A New Phase of the Struggle

"Were we to attempt now to continue the expropriation of capital with the same intensity as heretofore, we would surely be defeated; for our work of the organization of proletarian accounting and control has . . . not kept pace with the work of the direct 'expropriation of the expropriators.' If we will now turn all our efforts to the work of the organization of accounting and control we shall be able to solve this problem, we shall overcome our shortcomings and shall win our 'campaign' against capital."

" . . . it is becoming urgent for the prole-

tarian state authority to make use of the bourgeois specialists for the purpose of replotting the soil so that no bourgeoisie could grow on it. . . . Without the direction of specialists of different branches of knowledge, technique and experience, the transformation toward socialism is impossible, for socialism demands a conscious mass movement toward a higher productivity of labor in comparison with capitalism and on the basis which has been attained by capitalism . . . the best organizers and the biggest specialists can be used by the state either in the old bourgeois way (that is for a higher salary), or in the new proletarian way (that is by creating such an environment of universal accounting and control as would inevitably and naturally gain the submission of and attract specialists)."

"Let us assume that these greatest 'stars' must be paid twenty-five thousand rubles each. Let us assume that this sum (25,000,000) rubles must be doubled (supposing premiums granted for particularly successful and rapid accomplishment of the most important tasks of organization and technique) or even made four times as large (supposing that we must get several hundred better paid foreign specialists). Well, then, can this expenditure of 50,000,000 rubles a year for the reorganization of the work of the people according to the last word of science and technique be considered excessive or unbearable for the Soviet Republic? Of course not. The vast majority of the conscious workers and peasants will approve such an expenditure, knowing from practical life that our backwardness compels us to lose billions, and that we have *not yet* attained such a high degree of organization, accounting and control which would cause the universal and voluntary participation of these 'stars' of the bourgeois Intelligentsia in *our work*."

"Of course, there is another side to this question. The corrupting influence of high salaries is beyond dispute—both on the Soviets (the more so, since the swiftness of the revolution made it possible for a certain number of adventurers and crooks to join the Soviets, who, together with the incapable and dishonest among certain commissaries, would not mind becoming 'star grafters') and on the mass of workers. But all thinking and honest workers and peasants will agree with us and will admit that we are unable to get rid at once of the evil heritage of capitalism; that the Soviet Republic can be freed from 'tribute' of fifty or a hundred millions of rubles (a

tribute for our own backwardness in the organization of *universal* accounting and control *from the bottom up*) only by organization, by increasing the discipline among ourselves, by getting rid of all those who 'keep the traditions of capitalism,' i.e., of loafers, parasites and grafters. If the conscious advanced workers and peasants will succeed, with the help of the Soviet institutions, to organize and discipline themselves, and to create powerful labor discipline in one year, then we will in one year do away with this 'tribute' (which may be reduced even earlier) depending on the measure of success attained in creating labor discipline and organization among the workers and peasants. The sooner we ourselves, workers and peasants, will learn better labor discipline and a higher technique of toil, making use of the bourgeoisie specialists for this purpose, the sooner we will get rid of any tribute to these specialists.

"The center of gravity of the struggle with the bourgeoisie is shifted to the organization of accounting and control. This must be taken into account in order to determine correctly the urgent economic and financial problems with regard to the nationalization of the banks, monopolization of foreign trade, state control of currency, the introduction of a satisfactory—from the proletarian standpoint—wealth and income tax, and the introduction of obligatory labor service.

"A socialist state can come into existence only as a net of production and consumption communes, which keep conscientious accounts of their production and consumption and economize labor, steadily increasing its productivity and thus making it possible to lower the working day to seven, six or seven less hours.

Higher Productivity of Labor

"In every socialist revolution, after the proletariat has solved the problem of winning the power, 'the problem' is in the main and fundamentally a problem of the creation of a higher-than-capitalism social system—to raise the productivity of labor, and in that connection, and for that, to effect its higher organization. . . . "

"To increase the productivity of labor we must first of all secure the material basis of a large industry; the development of the production of fuel, iron, machinery and of the chemical industry. The Russian Soviet Republic" possesses "colossal stores of ore (in the Urals); fuel in Western Siberia (coal), Caucasasia and the southeast (petroleum) and Central Russia (peat); vast resources of lumber, water power and raw materials for the chemical industries, and so

on. The exploitation of these natural resources by the latest technical methods will furnish a basis for an unprecedented development of production."

"Higher productivity of labor depends, in the first place, on the improvement of the emotional and cultural state of the masses of the population. This improvement is now taking place with unusual swiftness, thanks to the Soviet organizations; but it is not perceived by those who are blinded by the bourgeois routine and are unable to comprehend what a longing for light and initiative is now pervading the masses of the people."

"Higher productivity of labor depends, in the second place, on higher discipline of the toilers, on higher skill, efficiency and intensity of labor, and on its better organization. . . . The most conscious vanguard of the Russian proletariat has already turned to the problem of increasing the labor discipline. For instance the Central Committee of the Metallurgical Union and the Central Council of the Trade Unions have begun work on appropriate measures and drafts of decrees. This should be supported and advanced by all means. We should immediately introduce piece work and try it out in practice. We should try out every scientific and progressive suggestion of the Taylor System. . . . To learn how to work—this problem the Soviet authority should present to the people in all its comprehensiveness. The last word of capitalism in this respect—the Taylor System—as well as all progressive measures of capitalism, combined the refined cruelty of bourgeois exploitation and a number of most valuable scientific attainments in the analysis of mechanical motions during work, in eliminating superfluous and useless motions in determining the most correct methods of work, the best systems of accounting and control, etc. The Soviet Republic must adopt valuable and scientific technical advance in this field. The possibility of socialism will be determined by our success in combining the Soviet rule and the Soviet organization of management with the latest progressive measures of capitalism. We must introduce in Russia the study and the teaching of the new Taylor System and its systematic trial and adaptation."

"While working to increase the productivity of labor, we must at the same time take into account the peculiarities of the transition period from capitalism to socialism, which requires, on the one hand, that we lay the foundation for the Socialist organization of emulation, and on the other hand, requires the use of compulsion" through a dictatorship of the proletariat.

Organization of Emulation

"Among the absurdities which the bourgeois is fain to spread about socialism, is that Socialists deny the significance of emulation. In reality only socialism, destroying classes, . . . for the first time opens the road for emulation on a really mass scale. And only the Soviet organization, passing from the formal democracy of a bourgeois republic to the actual *participation* of the toiling masses in *management*, for the first time puts emulation on a broad basis."

"Let us take publicity as a means for the organization of emulation. . . . We must systematically endeavor that . . . work should be carried on to create a press which will not amuse and fool the masses with spicy political trifles, but will bring to the attention of the masses and will help them to study seriously, the questions of everyday economics. . . . The press should serve as a weapon of socialistic instruction, giving publicity in all details to the successes of the model communes, studying the principle of their success and their methods of economy, . . . so that a comparison between the results of the enterprise of different communes would become a subject of general interest and study. . . ."

Efficient Organization and a Dictature

"It would be the greatest stupidity and the most absurd opportunism to suppose that the transition from capitalism to socialism is possible without compulsion and dictatorship. . . . In the first place, it is impossible to conquer and destroy capitalism without the merciless suppression of the resistance of exploiters; . . . in the second place, every great revolution, and especially a Socialist revolution, even if there were no external war, is inconceivable without an internal war . . . and a state of greatest uncertainty, instability and chaos . . . all elements of decay of the old order . . . cannot fail to 'show up' during such a profound transformation. . . . These elements of decay cannot 'show up' otherwise than through increase of crimes. . . . It takes time and an *iron hand* to get rid of this."

"This historical experience of all revolutions . . . was summed up by Marx in his brief, sharp, exact and vivid formula: 'The Dictature of the Proletariat.' . . . But 'Dictature' is a great word. And great words must not be used in vain. . . . There is lack of appreciation of the simple and obvious fact that, if the chief misfortunes of Russia are famine and unemployment, these misfortunes cannot be overcome by any outburst of enthusiasm, but only by

thorough and universal organization and discipline. . . ."

"Every large machine industry—which is the material productive source and basis of socialism—requires an absolute and strict unity of the will which directs the joint work of hundreds, thousands and tens of thousands of people. This necessity is obvious and has always been recognized . . . and we, the Communist Party (the Bolsheviki), which gives conscious expression to the aspiration of the exploited masses for emancipation, . . . should be in the front ranks of the weary masses which are seeking a way out and should lead them along the right road—the road of labor discipline—harmonizing the problem of holding meetings to discuss the conditions of work with the problem of absolute submission to the will of the Soviet director, dictator during work."

"The 'meeting holding' is ridiculed and more often wrathfully hissed at. . . . But without the 'meeting holding' the oppressed masses could never pass from the discipline forced by the exploiters to conscious and voluntary discipline. 'Meeting holding' is the real democratism of the toilers, their straightening out, their awakening to a new life, their first steps on the field which they themselves have cleared of reptiles, and which they want to learn to put in order themselves, in their own way, in accordance with the principles of their, Soviet, rule."

"Our aim is to attract every member of the *poor* classes to practical participation in the management, and the different steps leading towards this end (the more diverse the better) should be carefully registered, studied, standardized, verified on broader experience and legalized."

SOME ENGLISH OBSERVATIONS ON SCIENTIFIC MANAGEMENT

A REPRINT FROM *GREAT BRITAIN AFTER THE WAR*,
BY SIDNEY WEBB AND ARNOLD FREEMAN, OF SEC. D,
"SCIENTIFIC MANAGEMENT," OF CH. VIII, "HOW SHALL
WE REORGANIZE OUR MANUFACTURING PRODUCTION,"
BEING FACTS AND FIGURES, QUOTATIONS AND QUERIES,
SUGGESTIONS AND FORECASTS, CLASSIFIED TO HELP IN-
DIVIDUAL INQUIRERS AND STUDY CIRCLES.¹

OF later years a new panacea has been boomed, especially in the United States, entitled "Scientific Management." "So far the tremendous significance of 'scientific management' has not been fully recognised. Properly understood, it is the complement to the Industrial Revolution, which, by the more extensive use of machinery, etc., increased the efficiency of capital. The present movement aims at a similar increase in the efficiency of labour as an agent of production. The present movement aims at a similar increase in the efficiency of labour as an agent of production. The new revolution in industry has as yet merely begun, because employers, in spite of the motive of self-interest, are conservative; but it will receive an enormous impetus from the conditions arising out of the war." (Arthur Greenwood; "War and Democracy.")

"That these principles are certain to come into general use practically throughout the civilised world, sooner or later, the writer is profoundly convinced, and the sooner they come, the better for all people." (F. W. Taylor: "Principles of Scientific Management.")

WHAT IS "SCIENTIFIC MANAGEMENT"?

"Fundamentally, Scientific Management consists (1) of an improved system of piecework remuneration, with rates 'scientifically' fixed upon a minute and prolonged 'time study' of each operation, and 'therefore' incapable of alteration to the detriment of the workmen whom it may have tempted to enlarged output; (2) of the utmost possible standardisation of tools, equipment, operations and products, so as to permit of maximum production; (3) of elaborate 'motion study' so as to discover how exactly the workman should use his muscular force, with what intervals, and for what length of time, in order to produce the greatest result; (4) of 'routing and scheduling,' and directing by 'instruction cards,' not only every movement of material, tools, components and product within the factory walls, but also every movement of every workman to the same end; and (5) of the adoption of 'functional foremanship,' replacing the old-time single foreman by half-a-dozen specialized directors and instructors—the 'gang boss,' the

¹London: George Allen and Unwin, Limited, Ruskin House, 40 Museum St., W. C.

'speed boss,' the 'repair boss,' the 'route clerk,' the 'instruction card clerk,' the 'time and cost clerk,' the 'shop disciplinarian,' and the general inspector." ("The New Statesman," June 17, 1916.)

1. *The Case for "Scientific Management."*

(Our quotations are in the main from Dr. F. W. Taylor's "Shop Management" and "Principles of Scientific Management.")

The advocates of "Scientific Management" declare that it is possible by scientific investigation to find out the one "scientific" way of doing each job, the right sort of man for each kind of work, and the most effective methods of coöperation between managers and men. It is claimed that as a result of "Scientific Management" production will be largely increased, shareholders will secure larger dividends; employees can be paid greatly increased wages and allowed shorter hours, and will enjoy the satisfaction of "doing a good day's work"; and that the public will get "more commodities and better commodities at a reduced 'real cost of production'" (e.g., your pig-iron handler loads $47\frac{1}{2}$ tons a day instead of $12\frac{1}{2}$; your laborer shovels 59 tons instead of 16; your bricklayer lays 350 bricks an hour instead of 120, and in general the output per man is at least doubled; and cost of production is, of course, greatly reduced). Dr. Taylor further claims that "Scientific Management" has solved the "Labor problem." "At least 50,000 workmen in the United States are now (1911) employed under this system. . . . In place of the suspicious watchfulness and the more or less open warfare which characterizes the ordinary types of management there is universally friendly coöperation between the management and the men."

In justice to this new method of production, we should note: (a) That it is not merely a "capitalist dodge," but claims to be a system basing itself on exact science (e.g., "What constitutes a fair day's work will be a question for scientific investigation instead of a subject to be bargained and haggled over"); (b) that if employers, instead of introducing these methods chivalrously, try to make of them a mere profit-making device they are not introducing "Scientific Management," but a perversion of it, which, as experience in America has amply proved, can only end in failure. Mr. W. T. Layton goes so far as to say that "Where this system is worked with proper care for the consideration of the worker's interests, it would seem to be wholly good." ("Capital and Labour," p. 22); (c) that it is illogical to press the ar-

gument that "Scientific Management" will make the worker an automaton. Is he not an automaton already? Does not the evolution of our industrial system inevitably involve an increase of automatic labor? Is the worker more of an automaton when he is working rapidly and efficiently than when he is working slowly and clumsily?

2. *The Case Against "Scientific Management."*

Examination shows that the claims made for "Scientific Management" are not borne out by inspection of the establishments where it has been introduced—(See Hoxie's "Scientific Management and Labour")—perhaps because American employers, like those here, have seldom brains enough to carry it out as its inventors designed! Its good points are the insistence on efficient organization of the factory, use of the best machinery, prevention of any loss of time, and prompt application of labor-saving appliances. All this means only more intelligence in our employers, together with production on the most economical scale with larger factories and regularizing demand. It emphasizes the importance of (a) discovering, and (b) applying universally the best way of doing each job, instead of letting each man blunder for himself. It may teach our employers a great deal as to the economy of (a) short and regular hours; (b) intervals for rest and refreshment; (c) ascertaining precisely the most suitable tools for each job and each man (much more can be shovelled if the spade is exactly the right shape for the material and the right length for the man who wields it). All these are lessons for the manager.

But it fails altogether as to the share of the wage-earner. It is probably right in insisting on the necessity for Piecework Wages; but it refuses (a) to let the Standard Rate be settled by Collective Bargaining or law; (b) to make the Piecework Scale, once fixed, not subject to reduction at the will of the employer alone. It affords, therefore, no security against the rates being "cut" (as they have repeatedly been). Nor does "Scientific Management" throw any light at all on how the product should be shared (how high the Standard Rate should be). It is not in the least scientific from the standpoint of the economist; by science it means only exact measurement of the workers' effort by the stop-watch!

Scientific Management is opposed to increased Democracy in Industry, in the sense of the manual workers having any participation in the management. It does not seek to make the part of the manual worker

more intellectual or "self-developing," but less: the foreman is to show him exactly by what motions each job is to be done, and the workman is required to repeat precisely these motions all the day through. It seeks to segregate thinking on the one hand (in the manager and foreman); and muscular effort on the other (in the laborer). The skilled artisan, as we know him, disappears. (In view of the fact that physical training experts now lay great stress on perpetually varying their muscular exercises, the proposal to keep men all day repeating exactly the same movements demands investigation as to its effects on their health, strength, and mental development. No such investigation has been made by the advocates of Scientific Management).

3. The State and "Scientific Management."

Even if a student convinces himself that the philosophy of "Scientific Management" is "good," it will be obvious to him—on its originator's own admissions—that the "mechanism" is liable to grave abuse by grasping employers. He must, therefore, set himself

to the further task of thinking out what steps Trade Unionism and the State should take to safeguard the worker's interests. For it is certain that attempts will be made to introduce "Scientific Management" in this country, in one or other form. On the other hand, if a student becomes, after careful deliberation, an opponent of the new methods, let him avoid the error of thinking that Scientific Management will not "survive his disapproval"! Under a system of Private Capitalism, a system may be socially injurious and yet become widely adopted (as was the case with Truck, child labor, etc.) Germany, besides America, may well introduce the system on a great scale to increase her output; and what Germany does today in trade matters, England is apt to do tomorrow! The ultimate question for the student once again is: "What regulations can be framed by my Union, what laws can be passed by Parliament, in order that wherever Scientific Management is introduced, it shall be used only in such ways as will benefit the community, and not in such ways as will degrade the condition of the manual worker?"

ACKNOWLEDGMENT is made of the receipt of the following contributions to the library of the Society:

From Mrs. Frederick W. Taylor—

Clark and Wyatt: *Making Both Ends Meet*

Kalman: *Vitasorozat A Taylor-Rendszerről*

Merrick: *Time Study Data* (9 vols.)

Symposium on Scientific Management and Efficiency in College Administration (Society for the Promotion of Engineering Education. 1902.)

Taylor: *A Piece-Rate System*

De Beginselen der Wetenschappelijke Bedrijfsleiding

Japanese Translation of Scientific Management

Notes on Belting

On the Art of Cutting Metals

Principes d'Organisation Scientifique des Usines

The Principles of Scientific Management

Shop Management

Taylor-Roesler: *Die Grundsätze Wissenschaftlicher Betriebsführung*

Taylor and Thompson: *Concrete Costs*

Concrete—Plain and Reinforced

And numerous English, French, German and Italian monographs inspired by Mr. Taylor's publications.

From Dr. Frederick S. Lee—

Industrial Fatigue (Comm. on Labor, Advisory Commission Council of National Defense)

Lee: *The Effects of Temperature and Humidity on Fatigue*

The Human Machine and Industrial Efficiency

The Human Machine in Industry

Is the Eight-Hour Working Day Rational?

The Nature of Fatigue

And other pamphlets.

From Morris L. Cooke—

de Fremenville: Time required for labor on outside course and bulkheads in construction of 1400 ton transport (mimeographed translation)

For Review—

Schultze: Office Administration; McGraw-Hill Book Co.

ATENTATIVE schedule for future meetings of the Society has been approved by the Board of Directors, as follows:

1919	October	Boston
	December	New York
1920	February	Cleveland
	May	New Haven, Conn.
	October	Chicago
	December	New York
1921	February	Rochester, N. Y.
	May	Philadelphia

"THE existing attitude of Capital and Labor toward each other is too largely one of mistrust born of Fear. That was the position of the nations of Europe before the War. If Industry is to serve Humanity, this attitude must be changed to one of trust inspired by Faith. An industrial system characterized by antagonism, coercion, and resistance must yield to a new order based upon mutual confidence, real justice, and constructive good-will. The change will involve patience, but nothing short of it will solve the problems to which Industry gives rise." King, *Industry and Humanity*, p. xvi.

ON THE PRACTICE OF ENGINEERING

It is doubtful whether engineering has been practiced as a profession to a point where definite codes of ethics and cannons of practice are possible. Certainly management engineering as a branch of engineering practice has not. In the effort to supply what may be looked upon as an interim standard, the Board of Directors has approved the following statement in spirit, pending a time when there can be

A MANAGEMENT ENGINEERS' CREED

The sublimest duty of the engineer is to keep the faith:

The faith of the client that he will not undertake what he knows to be beyond his ability, and that with respect to what he undertakes he will give conscientious service to the limit of his ability;

presented to the Society an adequate code born of our own experience.

The faith of his fellow engineers that he will remain true to his science and will magnify and not cheapen it; and that he will base his efforts for public recognition upon ability, scientific attainment and actual performance, and not upon ambiguous self-laudation;

The faith of the community that he will undertake no service inconsistent with the public welfare; and that in service consistent with the public welfare, but in which the interests of groups appear to come in conflict, he will judge carefully and sympathetically the claims of rival interests, and attempt to establish that unity of purpose which promotes the public welfare.